

CURRICULUM GUIDE

Agriculture

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EDUCATION
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Junior High School
CURRICULUM GUIDE
for
AGRICULTURE
Grade IX
(Interim)

Province of Alberta
DEPARTMENT OF EDUCATION
1953



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IMPORTANT NOTES TO ADMINISTRATORS AND TEACHERS

1. "The report 'Your Child Leaves School', along with 'Youth Figured Out' by J. E. Robbins, shows that farm boys drop out of school in large numbers. Many of them at first enter primary industries in rural areas but later drift to towns and cities where their limited education confines them largely to unskilled occupations. Thus we have among farm boys large numbers who are not making the most of their abilities. They are unprepared for agriculture or for other skilled occupations. Some rural to urban migration appears inevitable, and is not undesirable. Moreover, factors largely beyond the control of the school affect such movements of population."* Education for rural youth should meet the needs of those who enter agriculture as well as other occupations.
2. Commencing September of 1953 the course as set forth herein will supersede previous course outlines in Grade IX Agriculture.
3. The course is designed as an alternative to one of the existing Grade IX options and is adaptable to meet the needs and interests of both rural and urban boys and girls.
4. The time allotment for the course is two-to-four periods per week. In order to facilitate an optimum amount of practical work, where possible, the table should provide for at least one double-period per week.
5. The peculiar nature of this learning area demands a considerable background of appreciation, experience and training in agriculture. However, until further notice, the Department will consider recommendations from superintendents for the establishment of this Grade IX Agriculture option in schools where the teacher is believed to possess something near to but not quite the necessary qualifications and where the school and home equipment warrants an expectation that practical work will be carried out successfully.
6. Before commencing the Agriculture program for Grade IX, teachers should study the entire course outline in order to become acquainted with the point of view of the course and how its contents can be adapted to the varying needs, interests and abilities of urban and rural boys and girls under various local conditions.

*McColl, A.G.: "Agricultural Education in Canada," The Canadian Education Association Journal, June, 1951.

INTRODUCTION*

The objectives of agricultural instruction in any school program should be based upon the needs and interests of the groups to be served.

In planning the content and learning activities for the course in agriculture, we should begin with a classification of pupil personnel in terms of their future probable relationships, as adults, to farming and agriculture in general. Such a classification should recognize the following groups of prospective adult workers who, in their occupations, are related to agriculture and farming in varying degrees.

1. Full-time farmers and ranchers: those who have selected this field as a vocation and have, or can obtain, facilities for placement and are now ready for specialized training in farming.
2. Part-time farmers, who will follow other vocations, but will earn some portion of their living from farming,
3. Owners of farm property with varying degrees of responsibility for a business in farming.
4. Those working in agricultural occupations other than farming but closely or more remotely related to farming.
5. Urban workers who will come into close contact with farmers or the leaders of their various organizations related to agriculture.
6. Pupils living on the farm but planning to follow other vocations as adults. To this group agriculture can offer organized work experience, guidance, and enrichment of their entire educational program, and organized work experience which can increase their earning ability while on the farm.
7. Present and future citizens who will share in the formulation of agricultural policies which will affect the entire industry, directly or otherwise.
8. Consumers of farm products. While the needs of consumers receive considerable attention in High School courses other than agriculture, an appreciation of agriculture and its products can make a unique contribution to consumer education.

*Adapted from Schafer, W.A., and Cline, R.W.; Department of Agricultural Education, University of Arizona, Tucson.

From the above classification emerge two major groups into which prospective students in agriculture may be placed: (1) those who are less directly concerned with the specialized production abilities in agriculture as a career, and (2) those who intend to farm or seek occupations in fields closely related to farming.

While the needs of the first or non-vocational group are less specific in terms of abilities to be acquired, in the broad field of agriculture there is an extensive body of significant content appropriate to the needs of both groups. Both need an overview, orientation, guidance and appreciation of the significance of agriculture to the economy and future welfare of every Canadian and world citizen. Supervised work experiences, ownership and management of enterprises of an agricultural nature will help the student to recognize his abilities, interests, and limitations. This in turn will aid to guide him in making vocational choices and setting goals before the sacrifice of too much time, effort, and enthusiasm.

In assisting students to make these choices the importance of an active counselling program cannot be overemphasized. The teacher should carefully review with the student the kind of training he will need for the occupation in which he is interested. Basic understandings and training opportunities may be accomplished through study, discussion, field trips, educational agencies, and the like. The teacher of agriculture should carefully explain to the student the program in vocational agriculture, if he is interested in farming or a related occupation. If the student is interested in another occupation the teacher should direct him to persons who are best qualified to give him the proper guidance.

For the second group of students, those who have decided to follow vocations in farming or its related fields, there should be included vocational objectives of instruction which will lead to a course whose primary aim is training for proficiency in farming.

While the teacher of agriculture seeks to develop his students through a study of rural problems and activities incident to farm life and related ways of living, he should recognize his students as adolescents with definite psychological characteristics and needs, some of the more important of which are:

1. They are aware of and concerned with certain physiological changes about which they need to gain an understanding.
2. Early adolescents especially have a desire to become independent of those who exercise control over them. Many are incompetent in assuming responsibilities that are commensurate with their demands for freedom from control. They need help in attaining increased ability to achieve such adjustments.
3. They want to do things, make things and "accomplish jobs" with success and thus develop a "reliance upon the security they can give themselves rather than the security provided by parents." Every normal youth has his own individual abilities and capacities with which he is capable of such achievement.
4. They want to be considered as valued members of a group; they form gangs or "crowds" and need help in improving their social competence.

5. They want to feel that their personality and actions are respected and admired by others, and particularly by their own age-mates.
6. They are inclined to be intolerant and dogmatic in their expressed opinions and attitudes, and are rebellious against conventions and externally imposed discipline.
7. They have made some progress in self-control, but they tend to overlook reality and run away from what is disagreeable.
8. They are concerned with the new, fresh, and unfamiliar in experience. They have perplexities and need counsel.
9. They are concerned about their future and need experiences which will enable them to explore vocational and educational opportunities. They need vocational guidance and enough training to get started in a career. And they want to make money.
10. They "lean" more heavily on recreation than do adults, and they need help in learning how to use their leisure time activities in a way that will contribute to their optimum social adjustment.
11. They need stimulation and guidance in solving their own problems and in forming opinions and attitudes which are basic to an evolving scale of values and a philosophy of life.

Basically, every high school pupil has a desire for success - to become "something" worthwhile and to feel that there is a definite place for him in our world of occupations. To assist him in his endeavor to identify his occupational interests, abilities and opportunities is far more significant than to plunge him suddenly into the details of specialized practices and skills pertinent to farming (just because he may be a farm boy). The nature of this program and other facilities in vocational agriculture courses afford the teacher unusual opportunities for services of this kind.

Fundamentally, this is a practical course in acquiring scientific knowledge and thence applying it through a variety of activities which involve reasoning and problem-solving. Formal lecturing or "telling" should be restricted to an absolute minimum and students should learn by doing.

Although the content of certain units in a beginning course is somewhat uniform for all schools and students, the teacher should make changes and adaptations in this course to meet the needs of students in local situations. Ample opportunity should be provided for individual differences, a wide variety of experiences and the discovery, exploration and further pursuits of special interests and abilities. These may form a basis for a desire for further study in these and related areas. (Guidance aspect.)

The teacher should familiarize himself thoroughly with the domestic and other local conditions pertinent to the course. Thence, it will be easier to select course content which will best meet the needs, interests and abilities of the pupils and their locale. The scope of agriculture provides ample opportunities for this.

The teacher should enlist the interest and co-operation of parents through the medium of a "pupil-project program-at-home". Interests may become common to pupil and parent. It should not be unusual to see parents and pupils working together on problems of mutual interest.

OBJECTIVES

On the basis of the foregoing philosophy, the objectives for the first year course in agriculture would include the developing of understandings, appreciations, attitudes, abilities, skills, and work habits which would lead to competence in choosing and conducting students' prospective relationships to agriculture - competence intellectually, emotionally, physically, socially, as well as in a civic sense.

More specifically some of these objectives have been developed as follows:

1. By providing a rich background of knowledge and information, to develop a better understanding and appreciation of agriculture and farm life, as well as a desirable attitude toward them, as related to:
 - (a) general contribution to our way of life and economy.
 - (b) basic control factors involved.
 - (c) general nature of procedures and practices involved.
 - (d) an awareness of the associated problems and hazards, and the importance of conservation and safety precautions.
 - (e) the need for improvement and maintenance of high standards.
 - (f) intelligent choices as consumers of agricultural produce.
 - (g) enjoyment of the rural environment.
2. To develop an understanding and appreciation of, as well as desirable attitudes toward, the role of youth in rural life - now and in the future - as related to:
 - (a) contributing toward, and maintaining, a satisfactory farm home.
 - (b) working effectively in organized groups.
 - (c) exercising constructive leadership, and recognizing and following worthy leadership.
 - (d) maintaining desirable relationships with parents, teachers, and the community.
 - (e) intelligently participating in worthy social and civic enterprises.
3. To develop proficiency in fundamental agricultural skills and abilities as related to:
 - (a) acquiring, understanding and effectively using the vocabulary and mathematics of agriculture.
 - (b) thinking rationally in the solution of agricultural problems.
 - (c) learning how to find and interpret the results of agricultural research, and thence applying them to practical work in agriculture.
 - (d) learning how to do by doing.
4. To develop strong vocational interests in agriculture, and to give aim and purpose to further occupational preparation, as related to:
 - (a) an awareness and appreciation of the numerous opportunities and possibilities in agriculture and its related occupations.
 - (b) giving students an opportunity to evaluate their interests and abilities in agriculture and related occupations and to determine the advisability of entering the field.

- (c) understanding and appreciating the need for further study and training and how to obtain it.
5. To develop the abilities and opportunities to earn money in agricultural pursuits through either:
- (a) placement for agricultural experience and training,
- or
- (b) production projects conducted at home which could form the beginnings of a future supervised program in vocational agriculture. The main objectives of either (a) or (b) are:
 - (i) to make an actual beginning and advance in an agricultural vocation.
 - (ii) to produce agricultural products and services efficiently.
 - (iii) to learn by doing the marketing of agricultural products and services.
 - (iv) to appreciate and to learn conservation of our natural resources.
 - (v) to learn to manage an agricultural business.
 - (vi) to learn to maintain a happy home environment.
6. Other objectives - to be added by teacher - arising from class discussion:

ORGANIZATION OF THE COURSE OUTLINE

The Grade IX option in agriculture will not supersede the topics or treatment afforded the agriculture units in the General Science course. Rather, this option is designed to expand and complement pupil experiences recommended in the Grade IX Science course. Wherever possible, it is strongly recommended that the activities set forth in this outline be very closely integrated with those suggested in the General Science course.

The course is organized to develop two main types of abilities on the part of the student: (1) broad unstandings and overview of the leading areas of agriculture, (2) skills and managerial abilities through the acquiring of agro-scientific knowledge and applying it to actual job experience in the form of practical work. These two types of abilities or learning experiences are provided for through the suggested subject-matter content of the various units which have been organized as follows:

Unit I: Understanding and appreciating agriculture and some of the problems of rural youth - orientation.

Unit II: Understanding the nature and behavior of plants and animals and how they are used.

Unit III: Selecting and organizing a program of practical work.

Unit IV: Understanding the nature of climate and soil as factors influencing the growth of plants and animals.

Unit V: Understanding how to grow plants indoors.

Unit VI: Understanding generally the kinds of things to grow and how to grow them.

Unit VII: Understanding how to select the most satisfactory growing and producing plants and animals:
A. Selecting plants.
B. Selecting animals.

Unit VIII: Understanding generally how some plants and animals are being produced.

Unit IX: Understanding some of the problems and hazards of agricultural production and what can be done about them.

Unit X: Appreciating and considering careers in agriculture and related occupations.

Special Note:

The entire subject matter content of Units I, II, IV and X is compulsory.

THE PLACE OF PRACTICAL WORK

Along with the activities suggested in the outline it is suggested that students be encouraged to carry out a program of practical activities at home and under the supervision of the teacher and the class. Choices should depend largely on student interests, available facilities, and local problems. Each student should be expected to undertake and carry through a practical work program during the year. The classroom activities should be closely integrated with the students' chosen work programs. More details regarding these work programs and suggested individual and group projects are itemized in a Note to Teachers following Unit II; page 24.

So that a project work program may be carried out to completion, suggestive outlines itemizing all the pertinent learning and doing activities related to specific individual or group projects have been set forth in Appendix I, as guides to the teacher and students. These include the following:

1. Animal Project program -----Page 46
2. Field Crops Project program -----Page 48
3. Vegetable Garden program -----Page 50
4. House Plants Plantation program -----Page 52

To facilitate rapid spotting of information pertinent to the subject matter content suggested for the various units a list of "Specific References Related to Units" is set forth in Appendix II, with appropriate instructions for use. This is followed by a suggested list of classified "References and Teaching Aids" in Appendix III.

JUNIOR CLUBS (4-H CLUBS)

Junior club work has a definite contribution to make in the field of training in agriculture and rural living. It is desirable that the closest co-operation be maintained between the club program, which may be sponsored by the Department of Agriculture, and the agriculture program of the school. However, the two programs are meeting different needs and are not substitutes for each other. Each should maintain its separate identity, but in close co-operation. 4-H Clubs, with their younger membership, can do much to create interest and encourage enrolment in the agriculture program. The agriculture program in turn can make provision for training senior students as leaders to help the supervisors of the 4-H Clubs. Both have one essential common bond, the welfare of the young person in the rural community and the arousing of his interest in agriculture.

At the Grade IX level students are permitted to include their 4-H Club projects as parts of their practical work programs. During the Agriculture periods they should learn and prepare the background.

of understanding underlying the techniques they apply in their project at home under the supervision of their club leader.

TEXTS AND REFERENCES

The basic student reference texts for the Grade IX option are:

Andrews, H.C.: Agriculture for High School (Gage, 1951)
The Story of the Soil (School-Book Branch, Department of
Education)

Although these references are suggested as basic, under no circumstances should this be allowed to become a textbook course. A library of references and pamphlets should be available for ready reference. It is most important that the students learn how and where and when to get information for themselves. A list of suitable references is set out in Appendix III.

STUDENT NOTEBOOK

The standard $8\frac{1}{2}$ x 11 inch notebook, of the hard-covered and loose-leaf type, with dividers for various areas - e.g., Animals, Botany, Field Crops, etc., has proven most satisfactory. The teacher should expect a high standard of regular and meaningful recordings.

PLANNING FOR INSTRUCTION

THE TEACHER MUST REALIZE THAT THE SUBJECT MATTER CONTENT IN THE OUTLINE IS SUGGESTIVE; IT WILL BE IMPOSSIBLE TO COVER ALL THE MATERIALS CONTAINED IN THESE PAGES.

Excepting the compulsory units I, II, IV and X, it is not intended that all pupils be required to cover all the suggested activities in complete detail during any one year. Undoubtedly some students will be able to cover more of the areas and in greater detail than others. Local conditions may place distinct limitations on the range of areas and activities. Their selection and the relative intensity with which they are to be covered should be determined by local conditions, individual pupil interests, needs and abilities. The teacher should provide the pupil with an opportunity for a wide variety of experiences and assist him in discovering and further pursuing special interests in the broad fields of plant and animal life and their use for human satisfaction. This course is rich in opportunities for such service.

The main purpose of this outline is to supply the teacher with a reservoir of suggestions which would assist him in keeping the teaching-learning process on a high level of interest through a broad range of vivid and meaningful activities and timely materials. Therefore the following steps are suggested as a guide for the teacher in using this outline:

1. Make a study of the local needs and conditions which will assist you in determining the course content.
2. Study the objectives as outlined and add others which you may find advisable and pertinent to your conditions.
3. Consult with your superintendent or principal regarding the credit value of the course which you are planning to conduct.
4. Check the content of the outlines on the following pages in terms of local conditions and make necessary deletions, alterations. (Units I, II, IV and X are compulsory.)
5. Study the suggested activities indicated in the various units determining which ones are to be used and adding new ones according to your conditions.
6. Make the necessary changes according to time available for this course. Not only must the total time allowance for the year be decided, but the distribution of this time must be made. The Department of Education does not expect the teacher to restrict the Agriculture option to single time-table periods equally spaced through the week. It will be quite in order to have double or longer periods on a less frequent basis. In line with the established principle of having courses extend over shorter periods than the academic year, in the

case of the Agriculture option it may be better to emphasize practical work during the fall and late spring months with a lessened emphasis upon this option during the winter months. The seasonal situations and the nature of the work being done at any one time should govern the time allotments.

7. Determine the type of work programs you anticipate the students will follow.
8. Check these activities against the related units of the Grade IX Science course. Then make a time schedule plan for the Science units so as to facilitate an optimum of timely integration of both courses.
9. Check the list of references in the library and consult the Appendix for any supplementary publications which will be especially useful in teaching the various units and areas.
10. Procure all student and teacher references needed before the opening of school. Assemble these according to areas so that they may be readily available when needed for class use.
11. Procure all specimen and other real materials before school opens. Classify and arrange them in the storeroom.
12. Prepare a list of teaching situations in the community to be used for major enterprises and field classes.
13. Proceed with unit activities commencing with Units I and II and follow through as suggested in "Notes to Teacher" throughout the outline.

For example, where four periods a week are allocated for the course, a typical total program of instruction may be in accordance with the following steps:

1. Commence the program with instruction in the compulsory Units I and II.
2. While dealing with the content of Unit III:
 - (a) Select programs of practical work, based on student interests, as outlined in the "Note to Teachers" preceding Unit III. This program may include all or any combination of the following:
 - (i) Laboratory experiences related to class instruction.
 - (ii) A group project: e.g. Vegetable Garden.
 - (iii) A number of different individual project programs based on student selection (e.g., some may be interested in beef cattle or swine, others in a field crop or house plants plantation.)
 - (b) Discuss and outline the program of preparation and work for the various projects, as outlined in Appendix I. Each student should have a copy of the outline pertinent to his selected project, and all students should be familiar with the programs of other students.
 - (c) Check the seasonal element with regard to the time when jobs pertinent to the various projects should be done and make program adjustments accordingly.

3. Continue with instruction as outlined in the compulsory Unit IV.
4. Conduct instruction on the content of Units V-IX inclusive, paying particular attention to those sections of the various units which are related to the various project programs. (The unit sequence as set forth in the guide facilitates an optimum of integration of class instruction with various work programs.)
5. Allow time for students to complete their individual and group programs of work within the limitations of local conditions.
6. Complete the program with instruction as outlined in the compulsory Unit X.

Where fewer than four periods a week are allocated for the course a more limited program will need to be provided in accordance with local circumstances.

Teachers wishing further assistance with the programming of Agriculture courses should communicate with the consultant on Agricultural Education, Department of Education.

METHODS OF TEACHING

1. Problem solving method:

The problem should be clearly defined, interesting, and meaningful, having sufficient scope for considerable learning activity. It should be not confined to assigning questions to be answered from a text.

2. The conference technique or round table discussion:

This method is very valuable toward training in citizenship, democratic procedures, leadership and co-operation. Participation by all should be insured.

3. On-the-job instruction:

This method involves individual instruction, help and "guidance", leading the student to think and act through his own problems systematically. It should be an important part of all agricultural teaching.

4. Field trips:

These must be well planned beforehand. The farmer should know what is wanted. Students should know what the trip is for and their responsibilities as guests.

5. Visual aids:

These are excellent for teaching if it is remembered that they are aids and not substitutes for the teacher.

EVALUATION AND RECORDS

Testing and examining should be a co-operative enterprise for the benefit of student and teacher. It must include an evaluation of such areas of progress as personal development, knowledge, skills and particularly agricultural practice. It will involve a combination of subjective and objective ratings. Teachers should study carefully the Suggested Guide for Evaluating Student Progress, set forth on the next page.

SUGGESTED GUIDE FOR EVALUATING STUDENT PROGRESS

<u>Term Marks</u>		<u>Possible Marks</u>
A. Personal Development:		15
1. Starts work promptly.		
2. Keeps himself and desk neat.		
3. Class posture and appearance.		
4. Initiative exhibited.		
5. Spells words correctly.		
6. Co-operates with classmates and with teacher.		
7. Pleasant and congenial attitude.		
8. Exhibits leadership ability.		
9. Gets to class promptly, goes immediately to seat.		
10. Talks quietly, not noisily.		
B. Factual Achievement:		20
1. Teacher's evaluation of quality of work and outstanding endeavor.		
2. Daily work and unit examinations.		
3. Quarter examinations.		
C. Practice Work, Agricultural and Future Farmer:		25
1. Each approved practice written and diagrammed in the classroom by the student.		
2. Each approved practice put into effect with approval of parent and instructor.		
3. Planning and executing jobs connected with production project.		
4. Planning and executing jobs connected with improvement and supplementary projects.		
Total		60

<u>Final Marks</u>		
A. Production Project Completion		40
1. Outstanding project work.		
2. Average project work.		
3. Below average project work.		
B. Term Marks		60
Total		100

N.B.: 65% of year's marks involve practical activities.

UNIT I: APPRECIATING AGRICULTURE AND SOME OF THE PROBLEMS OF RURAL YOUTH -
ORIENTATION

Through teacher telling and class discussion an overview and appreciation of:

A. Agriculture as an Industry

1. Agriculture: what it is; its scope.
2. Historical background of agricultural development in the community; outstanding and colorful personalities, as related to settlement in the west.
3. Agriculture in a changing world: trends in agriculture during the past century:
 - (a) Improved methods of production.
 - (b) Changes in marketing, processing, and distributing.
 - (c) Conservation of natural resources.
 - (d) Changes in farms and farm life; e.g., size and types, living conditions, hours of labor, mechanization.
 - (e) More government control.
 - (f) Greater demands on agriculture, through increasing population and limited agricultural resources in the world.
4. Significance of agriculture on a local basis.

Survey of all members in the community engaged in the following types of occupations:

- (a) Productive agricultural occupations.
- (b) Business and industry related to farming.
- (c) Agricultural service occupations.

B. Youth in Rural Life

1. Who are included (rural farm and non-farm)
2. Problems of rural youth:
 - (a) Finding jobs and related difficulties. (Many drop out of school - some remain on farms - others first obtain jobs in local towns - later drift to other towns and cities - limited education - confined to unskilled occupations - some return to farms - unprepared for agriculture or other skilled occupations.)
 - (b) Using leisure time.
 - i. Principal leisure time activities of youth - ages 16 to 24 (Maryland Study, American Youth Commission):

Type of Activity (approximate)	% Boys	% Girls
1. Individual sports: swimming, hiking, camping, hunting, etc	22	5
2. Loafing	18	8
3. Team Games	13	1
4. Reading	12	33
5. Dancing and Dating	11	12
6. Hobbies	4	19

- ii. How this compares with local situation.
- iii. Need for more organizations of special interest, etc.
- (c) Getting an education:
 - i. Why do many drop out of school?
 - ii. Why should young people attend school?

3. Organizations providing activities of interest to youth:

(a) Understanding 4-H Clubs:

- i. Purpose of the Clubs.
- ii. Organization of the "Canadian Council on Boys' and Girls' Club Work" on a national, provincial and local basis; kinds of clubs, sponsorship, emblem, motto.
- iii. Types of activities: meetings, projects, competitions, etc.
- iv. Membership and officials, privileges, and responsibilities.
- v. Advantages of being a member.
- vi. Investigating the possibilities of becoming a member of a 4-H Club:
 - a. Determining the types of clubs functioning in the community and their activities.
 - b. Consultations with parents and club leaders regarding the possibility of joining a club.
 - c. If possible, "what about joining a club?"

(b) Other youth clubs in the community.

C. Why Study Agriculture

- 1. Correcting false ideas and superstitions.
- 2. Investigations for possible vocations.
- 3. Making a start in agricultural work or production.

4. Understanding how to make farming more desirable through:
 - (a) Making it more profitable and satisfying.
 - (b) Improving farm home and family life.
 - (c) Developing better community life.
5. Why city people should be interested in agriculture:
 - (a) Income from industry and related occupations dependent on farm income.
 - (b) Tax money from farms and farmers.
 - (c) Voting intelligently on laws affecting agriculture.

D. Nature and Content of the Course

1. Comparing course content with that of others.
2. The place of practical work: through laboratory, group and individual projects: incorporation of 4-H Club activities.
3. Understanding and appreciating certain Agriculture class activities: grades and grading, tests, field trips, standards of conduct.

E. Organizing and Using Facilities

1. Seating according to ability to see, hear; breaking up cliques, etc.
2. Organizing and using a notebook.
3. Acquaintance with available facilities in the school: the library, laboratory, store rooms, etc.
4. Sources of information and how to use it.
5. Starting a personal library.
6. Keeping up with current developments in agriculture.

UNIT II: UNDERSTANDING THE NATURE AND BEHAVIOR OF PLANTS AND ANIMALS AND
HOW THEY ARE USED

Note to the teacher: In order to avoid undesirable duplication, where possible the subject matter of this unit should be integrated and correlated very closely with the course in General Science.

A. Botany of the Farm Garden and House Plants

1. Structures and Functions:

(a) Roots:

- their functions
- structures: primary, secondary, adventitious and hair roots
- internal structure: cortex, epidermis, core.
- tap and fibrous systems
- functioning: growth requirements, habits, osmosis, food storage

(b) Stems:

- structural features: nodes, internodes, hollow and solid stems, pith, rind, fibro-vascular bundles, cross-sectional structure of a tree
- functions and functioning

(c) Leaves:

- main purposes
- structures: simple leaf, blade, petiole, axil, stipule, compound leaf
- venations netted and parallel
- margins smooth and toothed
- habits deciduous and coniferous
- functioning of the leaf and pertinent problems: photosynthesis, transpiration, respiration

(d) Flowers:

- purposes
- component parts of a perfect (petunia) staminate and pistillate flower.
- arrangements and numbers of petals, sizes and shapes, regular and irregular, singles, doubles
- flowering habits
- pollination: the process; self- and cross-pollination; agents

(e) Fruit and Fruiting Habits:

- fleshy fruits: berry, drupe, pome
- dry fruits: nuts, grains, legumes

(f) Seed:

- structures:
 - dicotyledon (bean): testa, micropyle, plumul, cotyledons, hypocotyl
 - monocotyledon (wheat): brush, endosperm, embryo

2. Growth habits of plants:

- (a) Germination: requirements and steps in germination of dicots and monocots.
- (b) Further growth from germination to maturity, reproduction and death.
- (c) Annual, winter annual, biennial, and perennial habits of growth.

3. Uses of plants:

4. Classification of plants according to their uses, and identification by observing characteristics of different plant parts:

(a) Horticultural plants:

- i. Vegetables: what they are, their identification, and the part of each plant used.
- ii. Fruits: tree, bramble, and others: their identification.
- iii. Landscape plants (ornamentals):
 - a. Trees:
 - specimen, framing, shelter and shade trees
 - identification from leaf characters, mature size and shapes of trees growing in the community
 - b. Shrubs:
 - use in foundation planting, hedges
 - identification from leaf characters, mature sizes and descriptions of shrubs growing in the community.
 - c. Flowers:
 - annual and perennial, in formal and informal border arrangements
 - identification by size, flower color and growth habit.
(Note color combinations and plant arrangements of background, medium sized and edging plants..)

iv. House plants: foliage and flower; identification by observing foliage and flower characteristics.

(b) Field Crops: cereal, grain, native pasture, forage, fodder, soiling, silage, fiber, oil, root-sugar, cleaning, catch, restorative, and cover crops.

B. A Few Interesting Things About Animals.

(Horses, cattle, swine, sheep and poultry included.)

1. General characteristics of all farm animals:

- (a) Possess similar life cycle: i.e., birth, rapid growth, puberty and maturity, reproduction and "production", change of life, death.
- (b) Varying adaptations to climatic environment and shelter requirements.
- (c) Need "feed" and water.
- (d) Have fear, gregariousness, herding, flocking, leaders; implications for handling: stress kindness, firmness and safety precautions.

2. Horses:

- (a) Understanding terms: stallion, mare, foal, colt, fillie, bronco.
- (b) External parts: identification (drawing and labelling).
- (c) Habits of eating, resting, getting up, three- and five- gaited walking, pacing, self-protection, (large and swift in action).
- (d) Handling: using safety precautions:
 - i. Attracting attention by speaking to horses before grooming, harnessing, or saddling.
 - ii. How to lead a horse properly.
 - iii. Hitching and unhitching.
 - iv. Grooming.
- (e) Determining height and age.
- (f) Present use, performances, place, economic and other values of heavy draft, light harness, general purpose, riding types.

3. Cattle:

- (a) Understanding terms: bull, cow, heifer, steer, yearling, veal calf, short yearling, long yearling.
- (b) External parts: identification (demonstration, drawing).
- (c) Habits of eating: cows cud-chewing (young calves?), resting, getting up.
- (d) Temperament and self-protection.
- (e) Handling:
 - i. Safety precautions:
 - dehorning: purpose and methods
 - bulls: vicious and unpredictable nature; "Never trust a bull"; use of ring in nose; attending in barn; "Do not aggravate"; confinement.
 - ii. Training calf to lead.
 - iii. Herding cows: use of leaders.
 - iv. Handling dairy cows:
 - more temperamental nature: importance of a patient herdsman with a quiet disposition. "Music in dairy barns".
 - particular care to avoid udder damage and damage by dogs
 - estimating age and weight of cattle
 - beef weights according to age, carcass yields, by-products and other uses.
 - price situations
 - dairy cattle: lactating periods, milk and butterfat yields.

4. Swine:

- (a) Understanding terms: boar, sow, litter, gilt, barrow, suckling, weanlings, feeder.
- (b) External parts: identification (demonstrating, drawing and labelling).
- (c) Habits of eating (why "rooting"?), resting, getting up, temperament, self-protection and viciousness of some sows.
- (d) Handling:
 - i. Safety precautions.
 - ii. Handling and driving.
 - iii. Catching and holding.
 - iv. Avoid hitting with sticks: carcass damage.
- (e) Estimating weights of hogs.
- (f) Market age and weight; carcass yield.

5. Sheep:

- (a) Understanding terms: ram, ewe, lamb, wether, feeder.
- (b) External parts: identification (demonstration, drawings).
- (c) Habits of eating, ruminating, temperament, flock, resting.
- (d) Handling and driving, catching and holding.
- (e) Estimating age.
- (f) Weight according to age, fleece and carcass yields.

6. Poultry:

- (a) Names of sexes and offspring of chickens, turkeys, geese, ducks.
- (b) External parts of the chicken: identification (drawings, etc.)
- (c) Habits of eating, drinking (why grit?), molting, brooding, self-preservation.
- (d) Handling:
 - i. Very excitable.
 - ii. Catching and holding.
 - iii. Very susceptible to disease: cleanliness essential.
- (e) Egg yields, and carcass weights of broilers, friers, mature birds.

7. Other animals and pets: according to show interest.

NOTE TO TEACHERS: Concerning Unit III - "Selecting and Organizing a Program of Practical Work" - and further course organization.

1. The "practical" work should include the following phases:
 - (a) Recognizing the problem on hand in terms of the work to be done.
 - (b) Investigating and reporting the pertinent "Recommended Practices"- those practices which through good experience and experimentation have been proven to be the most satisfactory for the solution of the problem - as well as the reasons on which these recommendations are based.
 - (c) Applying the found information in actually performing the work or task.
2. The type of practical work to be done by students could include: laboratory work, group projects and individual investigations, recording and preparations for project work which could be and is conducted at their respective homes. The types selected for inclusion in this course should vary with available facilities and other local conditions.
3. The time factors: Where practical work is to be conducted time should be provided for it to be done during school hours. Hence the amount of practical work that shall be included in the course will be governed by the time available for the course relative to the number of credits allowed.
4. The optimum program of practical work in this course would include the following suggested phases:
 - (a) Teacher demonstrations relative to:
 - i. Botanical and cultural practices (House plants have proven an excellent medium for such purposes.)
 - ii. Animals - field trips to community farms.
 - (b) Laboratory experiences by students.
 - (c) Group projects - landscape and vegetable garden.
 - (d) Individual student projects, including 4-H Club activities, for which investigations and preparations are made at school and applied in the project work at home.

Teachers are permitted to program for any combination of these in accordance with student interests, needs and other local conditions.

5. The subject matter approach and organization for several group projects in Horticulture is outlined on pages . It is not anticipated that under all conditions all of the subject matter for all project types can be included. From these outlines the teacher should select that material which best meets the needs and interests of the class.
6. The subject matter approach for the Individual Projects is suggestively outlined in Appendix I. Teachers should select the "outline" for

individual students which fits in with the type project that is being conducted at home. Students are required to submit a written outline report on their individual projects. This report should include investigations, recommended practices, and techniques applied relative to the various phases included in the topical outlines selected and followed.

Where a student is conducting a project as a member of a 4-H Club, he should incorporate the materials found in the "lessons" which he obtained from the Club leader.

N.B.: Regarding 4-H Club incorporation. Teachers are asked to study the Introduction of this course outline regarding 4-H Clubs (see page 10), in order to understand the pertinent policies affecting incorporation and govern their activities accordingly.

7. The subject matter content in Units IV to X inclusive should be very closely related to the practical work programs selected by the students and should be incorporated into their group and individual project work in accordance with the respective headings appearing in the suggested outlines appearing in Appendix I.

UNIT III: SELECTING AND ORGANIZING A PROGRAM OF PRACTICAL WORK

A. Objectives, types and nature of the credited practical projects

1. Understanding the nature of the projects by types:
 - (a) Classroom and laboratory experiences.
 - (b) Group projects and characteristics:
 - i. Vegetable garden and its care.
 - ii. Landscaping project and its care.
 - iii. Cereal variety test plots.
 - iv. Others depending on local conditions and circumstances.
 - (c) Individual projects at home or as a member of a 4-H Club;
related characteristics:
 - i. Field plot of wheat, oats, barley, potatoes, etc.
 - ii. Vegetable garden.
 - iii. Home landscape.
 - iv. Developing a plantation of house plants.
 - v. Dairy or beef calf.
 - vi. Sheep.
 - vii. Swine, bred gilt, feeders, etc.
 - viii. Starting chicks.
 - ix. Other animal pets.
2. Understanding the purpose of these projects and the opportunities they offer.
3. Understanding students' responsibilities.
4. Understanding the basis of evaluation.

B. Selecting and Planning the Program

1. Developing a budget of time available.
2. Determining the facilities available and obtainable.
3. Selecting program components based on needs and interests.
4. Developing current and long term program and standards.
5. Developing current and long term budgets.
6. Parent interview and approval.
7. Plans for financing the program.

UNIT IV: UNDERSTANDING THE NATURE OF CLIMATE AND SOIL AS FACTORS INFLUENCING THE GROWTH OF PLANTS AND ANIMALS

Note to teachers: Teachers should be guided by the time factor and exercise caution to keep the subject matter of this unit at the level of general principles and avoid extensive detail.

A. Climatic Factors Affecting Plant Growth

1. Understanding the use of the terms "climate" and "weather".
2. Temperature:
 - effect on rate of growth
 - general adaptations
 - optimum day and night temperatures for house plants
 - tolerances of low temperatures (limits) of horticultural plants and cereals.
 - frost-free period, growing period in the locale
 - frost damage of house plants: identification and remedy
3. Moisture (precipitation):
 - (a) The role of water in plant growth.
 - (b) Surplus and deficiency symptoms.
 - (c) Making provision for adequate water supply:
 - i. House plants: watering principles and techniques, summer, winter.
 - ii. Irrigating gardens.
 - iii. Moisture conservation (Refer to Unit IX)
 - iv. Water testing services.
4. Atmospheric Humidity:
 - (a) Importance relative to transpiration and evaporation.
 - (b) Methods of controlling humidity for house plants.
 - (c) Controlling evaporation in field by reducing wind velocity with shelter belts and trash cover.
5. Air (Ventilation):
 - (a) Why plants need air.
 - (b) Ventilation for house plants.
6. Light:
 - (a) Importance relative to photosynthesis, rate of growth.
 - (b) Plant adaptations relative to shade tolerance.
 - (c) Comparison of various window exposures relative to suitability for the location of house plants.

B. The Nature of Soil as a Factor Affecting Plant Growth

(Note to Teachers: This section on soils should be closely co-ordinated with the section on soils in the General Science course.)

1. Importance of soil.
2. Origin and formation of soils.
3. Simple profile: top soil, sub-soil, bed-rock.
4. Some soil properties and components:
 - (a) Soil textures: sand, silt, clay, "loam"; general identification and properties.
 - (b) Structure, desirable type, importance.
 - (c) Soil air: importance.
 - (d) Soil moisture: movements, holding power, importance.
 - (e) Organic matter: nature; kinds: manures, peats, leaf-mold: importance, soil color.
 - (f) Soil temperatures.
 - (g) Micro-organisms.
 - (h) Soil nutrients: kinds and uses.
5. General soil requirements for satisfactory plant growth.

C. Animals, As They Are Affected by Climatic and Soil Factors

1. Temperature:
 - (a) Special adaptations.
 - (b) Varying degrees of tolerance.
 - (c) When cold:
 - require more feed to maintain body heat.
 - frozen tests: combs, etc. need shelter.
 - recommended barn temperatures.
 - (d) When hot:
 - less active; greater trouble with insects; require shade and water.
2. Moisture:
 - (a) Indirect effect through extent of plant growth and feed availability.
 - (b) Greater tendency to overgraze pastures in areas adjacent to fewer water holes.
3. Winds and storms:
 - (a) Need for shelter; habits of straying or "drifting".
4. Nutrient availability from soils: as it affects the quality of "feeds" and the nutritional welfare of the animal.
5. General soil fertility related to extent of plant growth and feed availability.

UNIT V: UNDERSTANDING HOW TO GROW PLANTS INDOORS

Note to Teachers: The subject matter of this unit should include an understanding of the general principles involved and, where possible, actual work experience.

A. Investigating and Providing the Necessary Conditions, Equipment and Materials

1. Making provisions for controlling atmospheric conditions in accordance with requirements.
2. Investigating, obtaining and properly storing the necessary materials and equipment: soils, rooting media, boxes, flats, pots, tools, etc.
3. Developing the code for standards of workmanship, behavior and responsibilities.

B. Propagating or Starting Plants

1. Seminally: starting house plants, flowers, vegetables from seed.
(Kinds based on student interests and selection.)
 - (a) Recommended time for seeding various plants.
 - (b) Requirements for germination.
 - (c) Seeding rate, depth, "gardeners' rule" for various types of seed.
 - (d) Damping-off and other diseases: nature, effects and prevention through soil sterilization and types of materials used.
 - (e) Preparing materials and sterilizing soil mixtures.
 - (f) Recommended procedures and after-care.
 - (g) Experience in seeding and after-care.
2. Vegetative propagation of plants:
 - (a) Why and when used.
 - (b) Stem cuttings - of the geranium or coleus.
 - i. Principles involved; requirements for root development.
 - ii. Use of hormones: "Auxan", etc.
 - iii. Time of such propagation based on proposed use of plant.
 - iv. Equipment and rooting media.
 - v. Recommended procedures for selecting, preparing and planting the cutting.
 - vi. Experience.
 - vii. After-care: relative to shading, temperature, watering, etc.
 - viii. Other plants that can be propagated thus, and when.
 - (c) Other vegetative propagations:
(Note to Teacher: The teaching approach in each case would be similar to that used with stem cuttings)
 - i. Cuttings: root, leaf, leaf-petiole.
 - ii. Divisions: ferns, etc.
 - iii. Planting: bulbs, corms, and tubers.
 - iv. Those more commonly used with outdoor plants:
 - a. Layering: simple, serpentine, mound.
 - b. Grafting: whip, cleft, bridge.

C. Further Cultural Practices Used in Growing Plants Indoors

1. Prolonging the bloom of cut-flowers.
2. Transplanting seedlings to pots and flats:
 - (a) When seedlings are ready for transplanting.
 - (b) Related principles involved in transplanting.
 - (c) Selecting and obtaining containers and materials.
 - (d) Preparing a recommended soil mixture.
 - (e) Recommended procedures and immediate after-care.
 - (f) Experience.
3. Shifting and Repotting Plants:
 - (a) When plants are ready for shifting and repotting.
 - (b) Related principles.
 - (c) Selecting and obtaining containers and other materials.
 - (d) Preparing materials and suitable soil mixture.
 - (e) Recommended procedures: preparing drainage, potting and immediate after-care.
 - (f) Experience.
4. Care of plants while growing:
 - (a) Adjusting for light, temperature, humidity and ventilation requirements.
 - (b) Displaying house plants.
 - (c) Watering: frequency in summer and winter, kinds of water and methods of irrigation depending on type of plant.
 - (d) Cleaning foliage.
5. Pruning and thinning:
 - (a) Purpose and principles involved.
 - (b) Time of pruning and thinning.
 - (c) Recommended methods and tools.
 - (d) Experience.
 - (e) Related to out-door shrubs.
6. The resting or dormant period:
 - (a) Principles of dormancy.
 - (b) Resting period for the various plants selected.
 - (c) Methods of "resting" plants.

UNIT VI: UNDERSTANDING GENERALLY THE KINDS OF THINGS TO GROW AND WHERE TO GROW THEM

A. Climatic - Soil Zones of Alberta

1. General climatic conditions in various zones: growing periods and levels of precipitation.
2. Belts of native vegetation: short-grass, medium grass, poplar and willow bluffs, park belt, forest, tundras.
3. Soil zones: location, extent, and general nature of soils in the Brown, Dark Brown, Black, and Gray Wooded soil zones.

B. Distribution of Types of Farming in Alberta

1. Understanding terms: Farm Type; General Farm or "Mixed" Farm; Specialty Farm.
2. Distribution of farm types in Alberta.
3. Distribution of types and breeds of live stock in Alberta.
4. Types of farming in the community.

C. House Plants

1. Determining the kinds of house plants that could be started at school and later taken home: selection according to student interests.
2. Making material, financial, and recording arrangements.
3. Starting house plant plantation; propagation; related theory and practices.

Note to Teacher: In order to provide ample time for the various propagations to "grow" and subsequently be transplanted, the subject matter content as outlined under House Plant Propagation, in Unit V, should be dealt with at no later than this stage.

D. Planning a Landscape for Home Beautification

1. Component areas: public, service, private.
2. Drawing to scale the plan of the area to be landscaped (public or private area only).
3. Simple rules of landscape arrangement.
4. Making the plan:
 - (a) Significance of a carefully prepared plan.
 - (b) Study of various plans used.
 - (c) Drawing the plan to scale, showing placement and kinds of components used: e.g., property limits, fences, walks, shrub foundation plantings

for various purposes, trees, hedges, perennial and annual flower borders and beds, lawns.

5. Shelter belts: advantages, arrangements, spacing, location.

E. Vegetable Garden

1. The garden site: location, size, protection, soil requirements.
2. Kinds of vegetables that could be grown.
3. Making the garden plan.

F. Making an Agricultural Work Calendar

1. Why time-job planning is important.
2. Selection of type of record-book.
3. Arrangement and divisions to show: month, week, and task to be done.
4. Making appropriate records progressively.

G. Fruit Garden

1. The garden site: location, protection and soil requirements.
2. Determining the kinds of fruits that can be grown with relative ease.
3. Making a plan of the fruit garden area.

H. Forage Crops (Overview and Appreciation)

1. What a forage crop is.
2. Kinds of plants commonly grown for forage crop purposes:
 - (a) Grasses: Crested Wheat Grass, Brome Grass, Creeping Red Rescue, Timothy.
 - (b) Legumes: Alfalfa, Sweet Clover, Red Clover, Alsike Clover, White Dutch Clover.
3. General characteristics of grasses and legumes: root systems, nodules.
4. Advantages of using forage crops.
5. Survey of kinds grown in community for:
 - (a) Pasture purposes.
 - (b) Hay purposes.
 - (c) Pasture and hay purposes.
6. Selection of grasses for specific purposes:
 - (a) Advantages of a grass-legume mixture.
 - (b) Mixture recommended for hayland pasture purposes.
7. When starting the seeds:
 - (a) Importance of shallow seeding into a firm, moist seed bed.

I. Kinds of Animals to Raise

A consideration of the following factors related to the types of animal projects which students would like to conduct at their respective homes:

1. Personal qualifications of a successful live stock raiser:
A liking for animals; patience and perseverance; willingness to give regular personal attention; desirable attitudes towards live stock enterprises; willingness to adopt new methods (Discussion as to why these are very important).
2. Would the animal project fit into the home farm program and make a valuable contribution to it?
3. Would the project fit into the general live stock pattern characteristic of the local area?
4. What would be the housing, equipment, feed and labor requirements related to the project?
5. What are the present opportunities for such a project, conducted alone or as a member of a 4-H Club?
6. What would be done with the animal eventually?
7. Making a long-term plan for expansion.
8. Results of parent interview for approval, etc.

Note to Teacher: With regard to home projects, a considerable amount of individual student guidance is vital.

UNIT VII: UNDERSTANDING HOW TO SELECT THE MOST SATISFACTORY GROWING AND
PRODUCING PLANTS AND ANIMALS

PART I: SELECTING THE BEST GROWING AND PRODUCING PLANTS

Note to Teachers: Caution should be exercised to avoid extensive detail by maintaining the subject matter of this unit at the level of general principles, overview and appreciation with practice in elementary identification and selection of those crops which are of local interest and in accordance with student abilities.

A. Field Crops: Wheat, Oats, Barley, Sugar Beets, etc.

1. Specific uses and related general requirements (quality) of each crop.
2. Understanding the term "variety".
3. Varietal zonation of Alberta (Map).
 - (a) Committee: purpose, members.
 - (b) Publication availability and source.
 - (c) Variety recommendations for the current year, relative to the local area.
4. Consideration of the following crops and varieties in accord with local significance: their identification and general characteristics:
 - (a) Spring wheat: Thatcher, Saunders, Rescue, Chinook.
 - (b) Winter wheat: Kharkov M.C. 22, Yogs.
 - (c) Soft:white: Lemhi.
 - (d) Oats: Victory, Eagle, Exeter, Ajax, Beaver, Larain.
 - (e) Barley: Compana, Harlan, Montcalm, Newal, Olli, Titam, Trebi, Vantage.
 - (f) Flax: Dakota, Royal, Redwing.
5. Good seed:
 - (a) Its characteristics and importance.
 - (b) Registered seed: requirements; advantages of use.
 - (c) Sources of good seed: farm grown, agencies.
 - (d) Elementary purity and germination tests.
6. Understanding how new and improved varieties are developed:
 - (a) Evidence of need for new and improved varieties: earlier maturing, higher yielding, resistance to lodging and disease, better quality, etc.
 - (b) Work of the plant breeder and experimental stations:
 - i. Selecting varieties with desirable characteristics.
 - ii. Cross-breeding, hybrids, hybridizing, capping.
 - iii. Further selecting, and crossing or back-crossing.
 - iv. Testing in plots for performance, etc.
 - v. Licensing and naming.
 - vi. Developing seed in quantities for distribution.
 - (c) Importance of selecting recommended varieties.

B. Selecting Horticultural Plants to be Grown

1. House Plants: those that can be grown and looked after properly in accordance with their requirements: consider the sources of propagating material.
2. Vegetable varieties:
 - (a) Understanding the term "variety".
 - (b) Selecting varieties:
 - "Alberta Horticultural Guide": purpose, source, availability and format
 - Horticultural zonation of Alberta.
 - Selecting vegetable varieties recommended for the local area.
 - (c) Determining which vegetable plants are to be started indoors, and why.
 - (d) Sources of good seed; testing old seed.
 - (e) Determining quantities required, orders, ordering.
3. Fruits:
 - (a) Using the Alberta Horticultural Guide to select types and varieties of fruits recommended for the local community.
 - (b) Determining quantities required, sources, orders, ordering.
4. Landscaping and home beautification:
 - (a) Using the Alberta Horticultural Guide and seed catalogs to select trees, shrubs, perennial and annual flowers, according to the requirements of the landscape plan; paying attention to characteristics of mature plants, sizes, shapes, shade tolerance and color combinations.
 - (b) Determining the quantities of propagating materials required.
 - (c) Sources of propagating materials.
 - (d) Making orders and ordering.
 - (e) Soil requirements.

PART II: SELECTING ANIMALS ACCORDING TO THEIR USES AND BREEDS

Note to Teachers: Avoid extensive detail and maintain the subject matter of this section at the level of general principles, overview and appreciation with practice in elementary judging based on student needs, interests, and abilities.

1. Understanding the meaning of the words "type" and "breed".
2. Horses:
 - (a) The draft type:
 - breeds
 - (b) Light horses:
 - types and breeds
 - saddle horses and breeds
 - harness horses and breeds
3. Cattle:
 - (a) Beef:
 - type characteristics
 - breeds: origin and characteristics of Aberdeen Angus, Galloway, Hereford, Shorthorn.

- (b) Dairy:
 - type characteristics
 - breeds: origin and characteristics of Holstein-Friesian, Ayrshire, Jersey, Guernsey
- (c) Dual Purpose:
 - type characteristics and importance
 - breeds: origin and characteristics of Milking Shorthorn, Red Poll
- 4. Sheep:
 - (a) Classification of sheep.
 - (b) Origin, general characteristics, and importance of:
 - i. Fine wool breeds: Rambouillet.
 - ii. Medium wool breeds: Suffolk, Hampshire, Southdown, Cheviot, Shropshire, Oxford.
 - iii. Long wool breeds: Leicester.
- 5. Swine:
 - (a) The lard type - why not popular in Canada.
 - (b) Bacon type:
 - type characteristics
 - origin and general characteristics of Yorkshire, Tamworth, Improved Berkshire
- 6. Poultry selection according to uses and breeds:
 - (a) Understanding terms: class, breed, variety, as applied to chickens.
 - (b) General characteristics of the egg, meat, and general purpose types.
 - (c) General characteristics and relative popularity of the various breeds of the American, Asiatic, Mediterranean and English classes.
 - (d) Turkeys, ducks, and geese: types and breeds.
- 7. Other animal pets: types, breeds.
- 8. Understanding how animals are improved:
 - (a) Evidence for need of improvement: to better meet our requirements: e.g., higher milk yields and egg production, greater and faster rates of gain in weight, larger litters, etc.
 - (b) Commencement of modern breeding.
 - (c) Systems of breeding (appreciation of general principles only, through examples):
 - i. Scrubs: breeding and scrub animals.
 - ii. Grading-up and grade animals.
 - iii. Cross-breeding and cross-bred animals.
 - iv. Pure-breeding and pure-bred animals.
 - v. Out-crossing.
 - vi. In-breeding.
 - vii. Line-breeding.
 - (d) Pure-bred vs. grades.
 - (e) Importance of selecting "good" sires and dams.

UNIT VIII: UNDERSTANDING GENERALLY HOW SOME ANIMALS AND PLANTS ARE PRODUCED

Note to Teachers: Appreciation of the general principles involved with actual work experience at the doing level according to local conditions and student interests, needs, and abilities.

A. Animal Production

1. Understanding how some animals are being raised in Alberta (overview and appreciation through teacher telling and class discussion.).
 - (a) Cattle ranching: early history, cowboys, round-ups, branding, modern ranching.
 - (b) Sheep ranching.
 - (c) Livestock on the farm.
 - (d) Fur farming: significance and general procedures.
2. Investigating the types of shelter and equipment used (overview and appreciation through investigations, teacher telling and class discussion.)
 - (a) General principles involved and need for them: economy, convenience, sanitation, animal comfort and ventilation.
 - (b) Study of specific buildings and equipment used in pertinent individual livestock projects conducted by students (Only for students who have selected individual projects in animal husbandry).
3. Understanding and learning how to handle livestock products:
 - (a) Milk:
 - importance of sanitation for wholesome milk production, cleanliness of barn, animals, utensils and operator.
 - recommended rules and procedures for milk.
 - cream separator: principles of operation and management for efficiency in operation and sanitation.
 - proper handling and storing of milk and cream.
 - (b) Animals finished for shipment: how to avoid losses through bruising and overloading.
 - (c) Wool: proper handling and care.
 - (d) Eggs: recommended methods of gathering, storing and preparing for market.
 - (e) Meats for market: storage and handling.
4. How animals are fed properly:

(Note to Teacher:) Caution - consider student interests, needs and abilities and avoid extensive detail by maintaining this subject matter at the level of fundamental and general principles relative to practical application.)

- (a) Understanding general nutrient requirements of animals and their respective general functions: water, carbohydrates, proteins, minerals, vitamins, bulk.
- (b) Understanding the nature of some common feeds fed to livestock:
 - roughages, concentrates, succulents (definition)
 - inadequacy of farm grown grains, grasses and straws
 - importance of properly cut and cured green hays
 - deficiency of proteins and minerals (stress)
 - need for making up for deficiency

- (c) Supplements: meaning.
 - commercial supplements commonly used:
 - linseed oil meal and tannage for protein content
 - salt, bonemeal, lime, calcium, monophosphate for mineral content
 - appreciating the significance of:
 - skim milk in the ration
 - alfalfa and other legumes
- (d) Balanced ration (elementary - avoid detail):
 - What is a balanced ration?
 - general components of "balanced rations" commonly used, e.g.:
 - water
 - roughages: hay and pasture, grass with and without legumes
 - concentrate (grains): wheat, oats, barley, combinations, usually ground for easier digestion and palatability
 - protein supplements: linseed oil meal for cattle and tannage for hogs
 - mineral supplements: salt and bonemeal
- (e) Investigating rations and feeding programs which have been found suitable for various types of animals.

(Note to Teachers: Section "e" need be only for those students who are conducting individual live stock projects at home. The findings should be accurately recorded in their project reports.)

B. Horticultural Crops

- 1. Vegetable garden:
 - (a) Starting indoors or under glass:
 - in the house
 - cold frame: principles, construction, management
 - (b) Hardening-off: use of cold frame.
 - (c) Seeding in the garden:
 - preparation of soil: previous fall and current spring
 - seed treatment
 - seeding time, depth, rates in rows, distances between rows
 - equipment and procedures recommended
 - experience in seeding
 - (d) Transplanting seedlings from cold frame to garden: time and methods.
 - (e) Cultural practices in caring for the garden:
 - irrigation
 - thinning, weeds, and weeding
 - insect control: identification of common garden insects; their damage; selection and use of insecticides
 - hilling and blanching
 - (f) Harvesting:
 - when vegetables are ready for harvest; procedures
 - (g) Storing vegetables:
 - storage requirements for preserving quality
 - basement storage
 - root cellar: construction and management
- 2. Landscaping:
 - (a) Preparation of soil.
 - (b) Trees and shrubs: planting time; care on receiving plants; planting; pruning; after-care.

- (c) Flowers: perennials and annuals; planting time and techniques.
- (d) Lawns:
 - selection of lawn grass mixtures
 - preparing seed bed and seeding procedures
 - after-care: watering, mowing, weed control, fertilizer and fertilizing.

3. Fruits:

- (a) Planting time, methods, and after-care.

C Becoming Acquainted with Some of the Equipment Used in Field Crop Production (Farm Machinery)

1. Farm machines: identification, use, and generally how they work:
 - (a) Tractors: trends and types.
 - (b) Tillage machines: types of plows - disked, toothed - weeding machines.
 - (c) Seeding machines: drills, tiller-combines, etc.
 - (d) Harvesting machines: binder, thresher, swather, combines.
 - (e) Haying machines: mowers, windrowing machines, loaders, stackers, bailers, etc.
 - (f) Miscellaneous: seed-cleaners, machines for grain-handling, etc.
2. Proper care and use:
 - (a) Storage
 - (b) Operation and maintenance:
 - i. Tractors: checking for water, fuel, lubrication, tire inflation, speed of operation, driving.
 - ii. Machinery: inspection for needed repair, lubrication.
3. Farm Safety: hazard check list.

D. Field Crop Production

(Overview and appreciation through discussion and teacher telling.)

1. Grain Growing: procedures and equipment used:
 - (a) Obtaining seed: sources and time.
 - (b) Seed cleaning and treating: purposes, methods, why mercuric treatments and not formaldehyde?
 - (c) Seed bed preparation.
 - (d) Seeding: time and methods.
 - (e) Weed control: with 2,4-D; when?
 - (f) Harvesting: when grain ready; methods; problems.
 - (g) Storing:
 - testing for "heat"
 - pounds per bushel of each grain
 - determining the number of bushels in a bin
2. Forage crops:
 - (a) Hay crop production:
 - i. Seeding: stress shallow seeding into a firm and moist seed bed.
 - ii. Harvesting to preserve quality (When should cutting be done?); proper stack building.
 - iii. Determining tons of hay in a stack.

- (b) Pastures and pasture management:
 - i. Effects of overstocking.
 - ii. Recommended management practices.
 - iii. Herd laws.

E. Determining Financial Progress

- 1. Farming is a business as well as a way of life.
- 2. Importance of keeping and using records and accounts.
- 3. Costs:
 - direct and indirect as related to various enterprises
 - starting and keeping feed records.
- 4. Returns:
 - gross returns and net returns
 - starting and keeping production records
- 5. Cropping and single enterprise livestock accounts.

UNIT IX: UNDERSTANDING SOME OF THE PROBLEMS AND HAZARDS OF AGRICULTURAL PRODUCTION
AND WHAT CAN BE DONE ABOUT THEM

Note to Teachers: The main purpose of this unit is to develop an awareness and appreciation of a few of the significant problems associated with agricultural production and generally what can be done about them. Its content can easily become too extensive for the time available. The teacher should peruse the subject-matter suggested in the Unit and select for more detailed consideration, in accordance with student interests, needs and abilities, at least those sections whose content is most pertinent to conditions in the local community. Other content should be maintained at a general appreciation level. It should be stressed that all residents, urban and rural, are affected by these problems.

A. Climatic Hazards

1. Frost damage:
 - nature and extent of annual frost damage to crops
 - remedy; selecting early maturing varieties and timely seeding.
 - precautions against frost with horticultural plants.
2. Hail:
 - nature, extent of damage and distribution
 - what about hail insurance?
3. Drought:
 - frequency and distribution
 - moisture conservation: through summer-fallow, moisture storing, and weed control on summer-fallow and stubble lands.
 - irrigation: why and how we irrigate

B. Loss of Soil Fertility

1. Evidence of losses.
2. Rotations: generally - what they are, their purpose and nature.
3. Restoring fertility by use of:
 - (a) Commercial fertilizers: benefits, recommended kinds and rates.
 - (b) Fertilizing house plants: selection, techniques, and precautions.
 - (c) Barnyard manures: advantages of use, rate of application, precautions.
 - (d) Green manure crops: what they are, which to use, methods.

C. Other Soil Problems

1. Erosion:
 - (a) Wind erosion: nature and extent.
 - (b) Water erosion: nature and extent.
 - (c) Recommended tillage practices:
 - shallow tillage; maintaining a trash cover
 - operating speeds of machines
 - (d) Remedying wind and water erosion.
2. Others based on local conditions.

D. Weeds

1. Definition, nature and extent of damage.
2. Why difficult to control; how they spread.
3. Collecting, identifying, pressing and mounting weeds growing in the local area. Suggested minimum list: stinkweed, wild mustard, wild oats, quack grass, Russian knapweed, field bindweed, leafy spurge, hoary cress, toad flax, others of local significance.
4. Classifying the weeds as to habits of growth: annual, winter annual, biennial, perennial.
5. Control with 2, 4-D:
 - (a) Generally, how it is claimed to work.
 - (b) Using susceptibility charts to determine susceptibility of the weeds found in the community and types of useful local plants damaged.
 - (c) Recommended stages and rates of application to wheat, oats, barley and flax.
 - (d) Use in controlling weeds in lawns.
6. Soil sterilant for weed control ("Atlacide"):
 - (a) How it works; use; precautions.
7. "Prohibited" weeds: what they are, members, identification. What to do about them?
8. Prevention: general recommendations.
9. Control measures for problem weeds in the community.

E. Disease of Plants and Animals

1. General nature and habits of bacteria, fungi, and virus.
2. How plant and animal diseases are spread.
3. Plant diseases:
 - (a) General symptoms of diseases: observing type of damage.
 - (b) Specific diseases: identification and recommended control measures, according to local significance, of:
 - grains: loose and covered smut; rust; root-rots
 - potatoes: common scab; bacterial ring-rot; rhizoctonia
 - seedlings: damping off
 - others: as incident in the community
 - (c) Economic significance.
 - (d) General measures of prevention and control.
4. Animal diseases (Stress those contagious to humans.):
 - (a) General symptoms, effects and control measures of:
 - sleeping sickness, swamp fever
 - blackleg, Bang's disease, hemorrhagic septicemia, tuberculosis, bloat, rabies, and others as found incident in the community
 - pullorum, coccidiosis, Newcastle's disease
5. Federal and Provincial laboratory services.

F. Insects

1. External structure of insects (e.g. the grasshopper.)
2. Life cycle: complete and incomplete metamorphosis.
3. Beneficial insects:
 - (a) Which? How useful?
 - (b) Bees and beekeeping (Apiculture): appreciation and overview.
4. Harmful insects:
 - (a) Special structures:
 - biting and sucking mouth parts: types of damage
 - implications relative to selection of insecticides:
need for stomach and contact poisons
 - (b) Insecticides: arsenates, rotenone, pyrethrum, nicotine sulphate, D.D.T., B.H.C., Parathion:
 - classification according to type and harmfulness to humans
 - selection and application of insecticide preparations
 - precautions to be taken
 - (c) Identification, damaging stage and type of damage, general control measures (Select those which are of local significance):
 - plant: grasshopper, wheat stem sawfly, sweet clover weevil, wire worms, cutworms, potato beetle, aphids, red spider, and others.
 - animal: sheep tick, cattle lice, horn flies, black sand flies, mosquitoes and warble flies.
 - horses: blackflies and nose flies
 - swine: lice

G. Gophers, Rats, and Coyotes

1. Type and extent of damage.
2. Control measures and precautions.

UNIT X: APPRECIATING AND CONSIDERING CAREERS IN AGRICULTURE AND RELATED
OCCUPATIONS

A. Agricultural Occupations in Which People are Engaged

Note to Teacher: The main purpose of this section is to develop an awareness of the various occupations associated with agriculture as occupational possibilities, and a general appreciation of the type of activities involved in each. Extensiveness of detail should be governed by student needs and interests. Those occupations prefixed with (*) should receive more detailed consideration.

1. Occupations in productive farming (general nature):

- *(a) Types: general farmer, specialty live stock farmer (beef, dairy, swine, sheep, poultry), market gardener, farm manager, farm foreman, farm hand, herdsman, farm homemaker, part-time farmer.
- (b) Advantages of farming:
 - i. More independence, relative security, no seasonal "lay-offs".
 - ii. More and better food.
 - iii. Generally a longer and less "complicated" life.
 - iv. Greater variety of work which is more enjoyable.
 - v. Generally a fuller home and community life enjoyed.
 - vi. Accumulate more wealth.
 - vii. A better place to bring up children.
- (c) Disadvantages of farming:
 - i. Considerable capital required.
 - ii. Long hours of hard work during seasonal work.
 - iii. Requires wider diversity of abilities than many other occupations.
 - iv. Generally fewer home conveniences.
 - v. To some extent, weather conditions, beyond control, affect success in farming.

2. Occupations in business and industry related to farming

(Overview and appreciation of the general nature of the occupations through investigation, class discussion and teacher telling):

- (a) Floriculture: flower grower, greenhouse worker, greenhouse manager, salesman, foreman, gardener.
- (b) Forestry: woodland manager, logging engineer, appraiser, scaler, inspector, grader, technician.
- (c) Fruit and ornamental nursery: owner, manager, salesman, foreman, laborer.
- (d) Hatchery business: owner, manager, incubator operator, poultry specialist in selection, salesman.
- (e) Journalism and publicity: farm journal editor or writer, market news reporter, advertising specialist of agricultural products, radio announcer, director of agricultural programs.
- (f) Manufacturing and distributing:
 - i. Farm machinery: manufacturer, dealer, service specialist or mechanic, salesman, demonstrator, agency manager.
 - ii. Feed manufacturer, dealer, salesman, chemist.
 - iii. Fertilizer manufacturer, dealer, salesman.
 - iv. Insecticides, serums, herbicides, - as in (iii)
 - v. Processing and distributing farm products: butter maker, cheese maker, ice cream maker, dairy plant operator, buyer, field agent, dealer, jobber, inspector, salesman, auctioneer, co-operative

manager, livestock buyer.

vi. Seeds: grower, seed farm manager, seed dealer, salesman.

3. Agricultural service occupations:

(a) Agricultural education:

*i. District Agriculturist: duties and services available.

- Name and address of local "D. A."

ii. Others: agricultural extension specialist, cow tester, railway farm agent, farm account expert for group of farmers, 4-H Club specialist, *teacher of agriculture in high school, school of agriculture, or university.

(b) Civil Service (government services): agricultural chemist:

i. Generally: economist, *"agrologist", agronomist, animal husbandman, conservationist, dairyman, entomologist, superintendent of public institutional farms, forester, forest ranger, gardener, inspector of meats, milk, and plants, marketing specialist, plant pathologist, soil surveyor, soil technician, *veterinarian.

*ii. Research specialist: importance to successful agriculture and present great need.

(c) Private services: agronomist, agricultural engineer or chemist, farm appraiser, farm loan agent, farm superintendent, golf greenkeeper, landscape architect or gardener, manager or other position in farm co-operative or organization, industrial research specialist, rural electrification specialist, veterinarian, etc.

(d) Government officials, Alberta Department of Agriculture: appreciation of general duties and acquaintance with names of current officers: Minister; Deputy Minister; Assistant Deputy Minister and Superintendent of Schools of Agriculture; Commissioners of Field Crops, Live Stock, Dairy and Poultry; Supervisors of Fur Farms and Junior Activities.

4. Suggested student activities:

(a) Following class discussion each student rates five "agricultural" occupations according to his personal preferences, giving the characteristics of each occupation, and reason for his rating.

(b) Make an estimate of the number of people in the community engaged in the various types of "agricultural" occupations.

(c) Relative significance of agriculture.

3. Successful Careers in Agriculture

1. Consideration of some successful careers in agriculture:

(a) Nationally known: William Saunders, Charles Saunders, Seeger Wheeler, A.G. McCalla, E.A. Hardy, A.W. Platt, etc.

(b) Provincially known:

i. Department of Agriculture Hall of Fame:

ii. Master farmers.

iii. Others.

(c) Local community farmers, and agriculturally related business men and industrialists.

*2. Understanding the requirements for success in agriculture:

(a) Genuine interest in agriculture and rural life.

(b) Ability to think well.

(c) Wide and thorough knowledge of agriculture and rural life.

(d) Broad understanding in various fields of science.

(e) Possession of certain personal qualities: e.g., honesty, moral character, good judgment, dependability, good health, co-operativeness,

leadership abilities.

- (f) Possession of special personal qualities and training for particular "agricultural" occupations.

C. Understanding What Should be Considered in Selecting an Occupation

1. Factors to be considered:
 - (a) Personal interests and abilities relative to requirements for success.
 - (b) Opportunities in the considered occupation.
 - (c) Advantages and disadvantages of the occupation.
 - (d) Requirements for entering the work and being successful.
2. Assistance in determining students' interests and aptitudes in "agricultural" occupations by:
 - (a) Students analyzing their own personal characteristics.
 - (b) Conducting various "practical" programs.
 - (c) Interest and aptitude tests.
 - (d) Work experience on the farm.
 - (e) Studying occupational information.
 - (f) Counseling with others.
3. Understanding what facilities are available for further needed training in agriculture:
 - (a) Vocational education in Agriculture courses in local high school (where such are being offered): their nature, scope, practical program, advantages, etc.
 - (b) Schools of Agriculture and Home Economics: locations and descriptions, purpose, entrance requirements, types and nature of courses offered, advantages, etc.
 - (c) Faculty of Agriculture, University of Alberta: location and description, purposes, entrance requirements, type and nature of programs offered, present dire shortage and need for highly trained personnel in agriculture, opportunities.
 - (d) Further 4-H Club activities.
4. Tentative selection: Each student, after studying occupational literature, etc., write a report on his chosen occupation or part-time farm, giving its characteristics, reasons for selection and plans for further training toward preparing for success in it.

APPENDIX I: PRACTICAL PROGRAMS

I. ANIMAL PROJECT PROGRAM - BEEF CALF

A. Overview of Various Aspects Related to the Project

1. Determining generally what things must be done: e.g., selecting the animal, changing feeds, castration, de-horning, training, etc.
2. Determining when they must be done.
3. Making a "management calendar" to show management practices which must be performed at various ages of the animal.
4. Planning the program of study.
5. Planning the format of the write-up.

B. Program of Study, Report and Practice

1. Why "Raising a Beef Calf" was selected as a project.
2. Student's responsibilities: If the project is conducted under 4-H Club sponsorship the student should report on: Club name, officials, and his responsibilities as a member of the club.
3. Understanding the animal (as in Unit II):
 - (a) External parts: identification (drawing and labelling).
 - (b) Habits of eating, resting, getting up, protection.
 - (c) Safety precautions to be taken in handling the calf.
 - (d) How to handle, teach to lead, and "hold" the calf.
 - (e) Estimate of its present and anticipated weights at various ages: at birth, four months, eight months, twelve months, eighteen months and twenty-four months of age; expected rates of daily gain; how to tape for weight.
4. Uses made of beef cattle.
5. Selecting Animals (as in Unit VII, Part II):
 - (a) Beef type: its characteristics.
 - (b) Breeds of beef cattle: origin, general characteristics, popularity.
 - (c) Understanding "systems of breeding"; pure-bred; cross-bred; "grade" and scrubs.
 - (d) Pure-bred vs. grades.
 - (e) Importance of selecting good sires and dams.
 - (f) Special points in selecting a calf - steer or heifer, etc.
6. Feeds and feeding program (See Unit VIII):
 - (a) Nutrient requirements of the calf at different ages.
 - (b) Digestive system of the calf (very general).
 - (c) Essentials of a good ration.
 - (d) Nature of feeds available at home.
 - (e) Supplements: those required, how provided and when.
 - (f) Feeding program of balanced rations for different ages.
 - (g) Keeping records.

7. Common calf ailments: scours, "going off feed": symptoms, causes, prevention, remedy.
8. Stables and stabling requirements (See Unit VIII)
9. Management practices:
 - (a) Dehorning: reasons, age, methods.
 - (b) Castrating: time and method; reason.
 - (c) Care of feet: why necessary; tools, techniques.
 - (d) Preparing for market:
 - i. Factors considered in grading and evaluating.
 - ii. Preparing for shipment.
 - (e) Preparing for show:
 - i. Training calf for show.
 - ii. Shaping and polishing horns.
 - iii. Washing and curling.
 - iv. Showmanship.
10. Judging: elementary procedures; giving written reasons.

References:

1. University of Alberta, Extension Department:

Beef Cattle, Selection, Fitting and Showing	Cir. No. 22
Cattle Finishing in Alberta	Bul. No. 34
Dairy Cattle, Care and Feeding of	Bul. No. 57
Sheep Production in Alberta	Bul. No. 52
Swine Production in Alberta	Bul. No. 22
Press Bulletin, Animal Science Department	Annual
2. Canada Department of Agriculture:

Canada Poultry Handbook	Pub. No. 683
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3. Raising Livestock, Peters and Deyor
4. Canadian Animal Husbandry, MacEwan and Ewan
5. The Livestock Book, Thompson and McKinney
6. 4-H Club Members' Lessons

II. FIELD CROPS PROJECT (Wheat, Oats, Barley, etc.)

A. Overview of Various Aspects Related to the Project:

1. Determining generally related tasks to be performed.
2. Making a "management calendar".
3. Planning the program of study.
4. Planning the format of the write-up.

B. Program of Study, Report, and Practice

1. Why growing the crop was selected as a project:
 - (a) Personal reasons.
 - (b) Economic prospects: possible returns based on long-term average yields and current price situation.
2. Botanical aspects of the plant:
 - (a) Description: identification of all parts (diagram and labelling).
 - (b) Growth habits, through its various stages.
 - (c) Adaptations: climatic, soil, competition, etc.
3. Production: (See Unit VI)
 - (a) Geographic distribution of production in Western Canada and the world.
 - (b) Extent of production and relative significance.
4. Uses of the plant (as in Unit II):
 - (a) Various things it is used for.
 - (b) Processes to which plant is subjected before being used (overview and appreciation).
 - (c) By-products and their uses.
 - (d) Desired quality standards.
 - (e) Its place in the farming program.
5. Selection of variety (See Unit VII, Part I):
 - (a) Description of all varieties of the same crop.
 - (b) Selection of recommended variety for the locale of the project and reasons for this.
6. Seed:
 - (a) Characteristics of good seed.
 - (b) Registered seed: what it is and its advantages.
 - (c) Seed cleaning: how a fanning mill works.
 - (d) Conducting a purity test on the seed and reporting results.
 - (e) Conducting a germination test and reporting results.
 - (f) Seed treating: purpose, when, chemical used, amount and method of application.
7. Seed bed preparation: general principles and methods.
8. Fertilizers: kind recommended for the local community; application time, method, rate.
9. Seeding: optimum time, method, rate.

10. Weed control with 2,4-D: recommended formulation, time of application for the particular crop, rate.
11. Insect pests: those attacking the crop in the area; their identification, damage, control.
12. Diseases: those which commonly attack the crop; symptoms and control.
13. Harvesting:
 - when the crop is ready for the harvest.
 - harvesting methods proposed.
14. Storage: moisture tolerance for storage.
15. Proposed disposal of harvested crop.
16. Records and accounts.

References:

1. University of Alberta, Extension Department:
 - Quality of Alberta Grown Wheat Bul. No. 37
 - Potato Crop in Alberta Bul. No. 46
 - Treatment of Seed Grain Cir. No. 5
2. Alberta Department of Agriculture:
 - Varieties of Grain for Alberta (current issue)
 - Rye in Alberta Mimeograph
 - Flax in Alberta
3. Canada Department of Agriculture:
 - Progress Report of (Local) Experimental Farm Station S. P. 29
 - Good Seed of Cereals and its Significance
4. University of Saskatchewan, Extension Department:
 - Wheat Varieties and their Production Bul. No. 86
 - Oat Varieties and their Production Bul. No. 104
 - Barley Varieties and their Production Bul. No. 99
5. 4-H Club Members' Lessons
6. Production of Field Crops, Hutcheson et al.

III. VEGETABLE GARDEN PROGRAM

1. Significance of Vegetable Gardening:
 - (a) Family garden.
 - (b) Part-time occupation: opportunities for enterprises.
 - (c) Market gardening.
2. Plants used: names, identification, general habits of growth, parts of plants used, place in diet:
 - (a) Bulb crops: onion, leeks, garlic.
 - (b) Salad crops and greens: lettuce, spinach, Swiss chard, kale, celery.
 - (c) Root crops: radishes, carrots, beets, Swede turnips, summer turnips, parsnips.
 - (d) Cole crops: cabbage, cauliflower, broccoli, Brussels sprouts.
 - (e) Legume vegetables: peas, beans, (snap, pole, shell, broad bean).
 - (f) Vegetable fruits:
 - i. Solanaceous: tomatoes, eggplant, pepper plant.
 - ii. Cucurbits: vine crops: cucumber, squash, pumpkin, muskmelon, watermelon.
 - (g) Potatoes.
 - (h) Sweet corn.
 - (i) Herbs
 - (j) Perennials: asparagus, rhubarb, horseradish, Jerusalem artichoke.
3. Garden site: location, size, shelter (See Unit VI).
4. Soil requirements and preparation: previous fall, current spring.
5. Making the garden plan: pertinent plant characteristics, rotations, spacing in and between rows, days before use or maturity, expected yields per length of row; drawing the plan to scale (See Unit VI).
6. Making a planting table or schedule: showing columns for: name of plant, row length, amount of seed per row, spacing between rows, spacing in rows, depth of seeding, days before harvest, expected yield.
7. Selection of varieties: based on recommendations found in current "Alberta Horticultural Guide"; purpose of Guide; committee members; horticultural zonation of Alberta; format; selection of varieties for local area (See Unit VII).
8. Germination tests on old seed stock: why needed; procedures.
9. Obtaining and treating seed: time, importance of good seed; sources, studying catalogs, ordering; seed treating - purpose and method.
10. Starting plants indoors or under glass:
 - (a) Reasons, plants, dates.
 - (b) Techniques and principles.
 - (c) i. Seeding: equipment, soil mixture, procedures.
 - ii. Care:
 - in dwelling house
 - hotbed: principles, construction, management.
 - glass house.
 - iii. Hardening-off: purpose, cold frame, techniques.

11. Commercial fertilizers: effects on growth, which plants to fertilize; precautions to be taken; kinds and rates of application; time and procedures of application.
12. Seeding outdoors and transplanting from cold frame: dates, recommended techniques.
13. Irrigation and cultivation for weed control (What of 2,4-D?)
14. Special cultural practices: e.g. thinning, staking, pruning, blanching: which plants, when, and techniques.
15. Watching for pests:
 - (a) Insects: types, damage, identification.
 - insecticides: selection, precautions, application.
 - (b) Diseases: identification of diseased plants and control.
16. Harvesting: time and procedures based on use, readiness, season.
17. Sorting for quality:
 - (a) Conditions necessary to preserve quality.
 - (b) Facilities:
 - basement: modifications and management.
 - root cellar: construction and management.

References:

Book: Vegetable Gardening, J.S. Shoemaker (Wiley and Sons)

Pamphlets:

1. Alberta Horticultural Guide, Extension, Alberta Department of Agriculture
2. Home Vegetable Growing, Extension Department, University of Alberta.
3. Treatment of Vegetable Seeds, Extension Department, University of Alberta.
4. Vegetable Gardening in Saskatchewan, Extension Department, University of Saskatchewan
(10¢ - very good)

IV. HOUSE PLANTS PLANTATION PROGRAM

1. Benefits derived from growing house plants.
2. Consideration of practical factors involved and project possibilities.
3. Identification (general) of approximately 20 plants from the following suggested list (number would vary with local availability):
 - amaryllis, anemone, garden annuals, artillery plant, asparagus ferns, begonias (tuberous and others), browalia, hyacinth, tulip, narcissus, cacti, calceolaria, cineraria, coleus, crocus, cyclamen, ferns, fuchsia, geraniums, gloxinia, hydrangea, impatiens, ivies, lily, oleander, periwinkle, philodendron, primrose, African violet, rubber plant, bowstring hemp, silk oak, wandering Jew, and others.
4. Selection of 10 different plants desired for a plantation.
5. Fundamental atmospheric requirements for growing house plants and making adjustments accordingly (See Unit IV):
 - (a) Light: why necessary; general adaptations of plants; window exposures in the home related to placement.
 - (b) Temperature: optimum day and night temperatures and practical adjustments.
 - (c) Ventilation: requirements and practical adjustments.
 - (d) Humidity: why necessary; desirable limits; providing these.
6. Displaying plants in the home:
 - (a) Consideration of general plant adaptations and requirements.
 - (b) Placement and attractive display arrangements.
7. Growth cycles: rest periods and related management.
8. Equipment and materials used in house plant work:
 - (a) Potting bench accessories.
 - (b) Containers: e.g., seed starting boxes, flats, and plant pots: types, sizes, shapes, care.
9. Soils and growing media:
 - (a) Requirements of a good soil mixture.
 - (b) Garden soils: their inadequacy for house plants (based on subject matter of Unit IV).
 - (c) Necessity of adding other components.
 - (d) Soil mixture components used: their characteristics, identification and local sources: loam, rotted manure, peat, leaf-mold, sand, sphagnum, vermiculite, krillium, fertilizers.
 - (e) Obtaining and storing.
 - (f) The compost pile.
 - (g) Preparing standard soil mixture.
10. Starting plants (See Unit V)
11. Starting individual student plantation for take-home purposes:
 - (a) Preliminary arrangements: financing, records, care at school.
 - (b) Reporting on and starting selected plants, according to:
 - i. Plant name, description of foliage, leaf, and bloom.
 - ii. Adaptations: atmospheric and soil requirements.

- iii. Propagation: method and time.
- iv. After-care.

12. After-care of house plants:

- (a) Watering (Unit V).
- (b) Training and pruning (Unit V).
- (c) Identifying nutrient deficiencies: fertilizing.
- (d) Potting, shifting, repotting (Unit V).

13. Troublesome insects: identification and control in incidence:
aphids, white fly, red spider, thrip, mealy bug, scale, midge, earthworms.

14. Hydroponics: soilless culture - principles, procedures.

References:

- 1. Greenhouse Gardening for Everyone, Chabot
- 2. House Plants, Godfrey (C.D.A.P. No. 798)
- 3. House Plants, Shoemaker, J.S., U. of A. Extension, Bul. No. 26

APPENDIX II: SPECIFIC REFERENCES RELATED TO UNITS

To facilitate rapid spotting of information pertinent to the subject-matter content suggested for the various units, specific references have been selected from the extensive list of "References and Teaching Aids" found in Appendix III, and itemized below. Reference books are indicated by title, source in code, and serial number. The codes used are as follows:

- U.A. - University of Alberta, Extension Department
- A.D.A. - Alberta Department of Agriculture
- C.D.A. - Canada Department of Agriculture
- U.S. - University of Saskatchewan
- (T) - Appraised as Teacher Reference

Film Numbers: according to the list of Audio-Visual Aids and not serial numbers.

In order to use this list of specific references related to instruction and activities on the "Structure and Functions of Plants" the following steps should be taken:

1. Identify the Unit and subdivision number of the subject-matter content, as indicated in the course outline (Example here: Unit 2, A-1)
2. Turn to the "Specific Reference" section below (Unit 2, A-1) and the following data are found:
 - (a) Teacher Reference: Basic Horticulture, a book, Chapters 1, 2, 3.
 - (b) Student Reference: Agriculture for High Schools, Andrews, Chapter 3.
 - (c) Appropriate films: No's. 6,7,8,9,10,11,12, according to the list number as appears in the Audio-Visual Aids list on page 72.
3. Further information regarding these and other references not shown in this section may be found in the section on "References and Teaching Aids", Appendix III.

UNIT I: APPRECIATING AGRICULTURE AND SOME OF THE PROBLEMS OF RURAL YOUTH -
ORIENTATION

- A.
1. Story of Wheat, Alberta Wheat Pool, pp. 3, 18, 20, 27
 2. Getting Acquainted with Agriculture, Chapter 25
 3. Farmers in a Changing World, U.S.D.A., Summary (T)
 4. Science in Farming, U.S.D.A. (T)
 5. Teaching Agriculture, Chapter 1 (T)
 6. Films: 1, 2, 3, 4.
- B.
1. Getting Acquainted with Agriculture, Chapter 2
 2. Canadian Council of Boys' and Girls' Work
 3. 4-H Club Members' Manual, A.D.A.
 4. Be Somebody, International Harvester Company Bulletin
 5. Recreation Fun for All.
 6. Psychology of Adolescence, Chapter 1 (T)
 7. Introduction to Agriculture, Grade IX, Curriculum Guide (T)
 8. Agricultural Education in Canada (T)
 9. 4-H Clubs: Teachers should read carefully the policies regarding the incorporation of students' 4-H Club activities, as described in the introduction, page 10.
- C.
1. Getting Acquainted with Agriculture, Chapter 1
 2. "Are You Superstitious?" - Country Guide, June, 1952
- D.
1. Introduction to this Curriculum Guide
 2. Perusal of courses of study for Grades X, XI, XII
- E.
1. Dominion Experimental Farms, C.D.A.
 2. Lists of Available Publications, U.A., C.D.A., A.D.A.
 3. Farm Magazines and Newspapers
 4. District Agriculturist

Additional Teacher Notes and References:

UNIT II: UNDERSTANDING THE NATURE OF PLANTS AND ANIMALS AND HOW THEY ARE USED

- A.1 1. Basic Horticulture, Chapters 1, 2, 3 (T)
 2. Agriculture for High Schools, Chapter 3
 3. Films: 6, 7, 8, 9, 10, 11, 12.
- A.3 1. Story of the Soil, pp. 17 -19
- A.4(a) 1. Vegetables for Prairie Farms, page 8, C.D.A. P. 663
 2. Home Vegetable Growing, U.A.B. No. 50
 3. Vegetable Growing, Shoemaker
 4. Deciduous Trees and Conifers (Hort.) C.D.A. P. 599
 5. Trees, U.S.D.A.
 6. Ornamental Shrubs and Woody Climbers (Hort.) C.D.A. P. 713
 7. Herbaceous Perennials for Canadian Gardens, C.D.A. P. 784
 8. Annual Flowers (Hort.), C.D.A. P. 796
 9. Garden Flowers in Color
 10. House Plants (Hort.), C.D.A. P. 798
 11. Local Seed House and Nursery Catalogs
 12. Film: 13.
- A.4(b) 1. Agriculture for High Schools, page 78
 2. Story of the Soil, pp. 19-25 (G)
- B. 1. Canadian Animal Husbandry, Chapter 2 and others (T)
 2. Raising Livestock, Chapters 2 and 5
 3. Canadian Poultry Handbook (A), C.D.A. P. 683
 4. Film: 14

Additional Teacher Notes and References:

UNIT III: SELECTING AND ORGANIZING A PROGRAM OF WORK

1. A Study of Basic Elements in an Agricultural Education Program,
J.A. Doyle (T)
2. Starting to Farm, Beard (T and S)
3. The Livestock Book, Chapter 1
4. 4-H Club Instructions and Lessons
5. Film: 5

Additional Teacher Notes and References:

UNIT IV: UNDERSTANDING THE NATURE OF CLIMATE AND SOILS AS FACTORS INFLUENCING
THE GROWTH OF PLANTS AND ANIMALS

- A.
 - 1. Basic Horticulture, Gardener, Chapters 5,6,7, (T)
 - 2. Guide to Farm Practices in Saskatchewan, pp. 3-8
 - 3. Greenhouse Gardening, Chabot, Chapter 5
- B.
 - 1. Story of the Soil, pp. 3-9; 11-12
 - 2. Guide to the Selection of Agricultural Soils, C.D.A. P. 748
 - 3. Films: 15, 16, 17
- C.
 - 1. Story of the Soil, p. 40 (S)

Additional Teacher Notes and References:

UNIT V: UNDERSTANDING HOW TO GROW PLANTS INDOORS

1. Agriculture for High Schools, Andrews, Chapter 7
2. House Plants, pp. 1-12, C.D.A. P. 798
3. Greenhouse Gardening for Everyone, Chabot, Chapters 2-6, 16, 17, 18
4. Basic Horticulture, Gardener, Chapter 16 (T)

Additional Teacher Notes and References:

UNIT VI: UNDERSTANDING GENERALLY THE KINDS OF THINGS TO GROW AND WHERE TO GROW THEM

- A., B.
 - 1. Cropping for Profit and Permanency, U.A. B. No. 44 (T)
 - 2. Story of the Soil, pp. 9, 10, 26-28
 - 3. Soil Zones of Alberta, Map, U.A.
 - 4. 4-H Club Members' Lesson on Soils
 - 5. Farming in Alberta, A.D.A.
- C.
 - 1. House Plants, C.D.A. P. 798
- D.
 - 1. You Can Landscape Your Own Home, Daniels (T)
 - 2. Farmstead Planning and Beautification, A.D.A., B. No. 9, Part 2
- E.
 - 1. Vegetable Gardening in Saskatchewan, U.S. B. 95, pp. 3-5
 - 2. Agriculture for High Schools, Andrews, Chapter 6
- F.
 - 1. Home Gardening the Year Round, Cutting (excellent guide for planning horticultural jobs the year round)
- G.
 - 1. Small Fruit Growing in Alberta, U.A. B. 54
- H.
 - 1. Hay and Pasture Crops for Alberta, A.D.A. Cir. 63
 - 2. Guide to Farm Practice in Saskatchewan, p. 47
- I.
 - 1. Raising Livestock, Deyoe and Peters, Chapter 1 (T)
 - 2. Story of the Soil, p. 51 (S)

Additional Teacher Notes and References:

UNIT VII: UNDERSTANDING HOW TO SELECT PLANTS AND ANIMALS

- Part I
1. The Story of the Soil, pp. 19-28, 35-38
 2. Agriculture for High Schools, Andrews, Chapter 4 and p. 167
 3. Varieties of Grain for Alberta, A.D.A. (Current issue)
 4. The Seed the Farmers Sow, A.D.A. (Form 106-9)
 5. Alberta Horticultural Guide, A.D.A. (Current issue)
 6. Film: 19
- Part II
1. Agriculture for High Schools, Andrews, Chapters 11, 14
 2. Raising Livestock, Peters and Deyoe, Chapter 2
 3. Canadian Animal Husbandry, MacEwan, Chapter 4 (T)
(Types described elsewhere in book)
 4. Canadian Poultry Handbook, C.D.A. P. 683, p. 16 (T)
 5. Story of the Soil, p. 43
 6. Boys' and Girls' Calf Club Members' Handbook

Additional Teacher Notes and References:

UNIT VIII: HOW SOME ANIMALS AND PLANTS ARE BEING PRODUCED

- A.
 - 1. Story of the Soil, pp. 54-68
 - 2. Animal Production Bulletins (U.S.: see References)
 - 3. Raising Livestock, Peters and Deyoe, Chapters 3, 4, 5
 - 4. Canadian Poultry Handbook, p. 141
 - 5. Cooling Milk on the Farm, C.D.A. P. 841
 - 6. Producing Pure Milk, C.D.A. P. Special 7
 - 7. Guide to Farm Practice in Saskatchewan, pp. 113-145
 - 8. Agriculture for High Schools, Andrews, Chapter 12
 - 9. 4-H Club Members' Lessons on Raising Various Animals
 - 10. Films: 18, 19, 20
- B.
 - 1. Agriculture for High Schools, Andrews, Chapters 6, 17
 - 2. Home Vegetable Growing, U.A. B. No. 50
 - 3. Small Fruit Growing in Alberta, U.A. B. No. 54
- C.
 - 1. Agriculture for High Schools, Andrews, Chapter 5
 - 2. Farm Safety Hazard Check List, Alberta Safety Council
- D.
 - 1. Agriculture for High Schools, Andrews, Chapter 4
 - 2. Story of the Soil, p. 28
 - 3. Grain Production Bulletins, U. of S.
 - 4. Guide to Farm Practice in Saskatchewan. pp. 38-57
- E.
 - 1. Agriculture for High Schools, Andrews, Chapter 15
 - 2. Raising Livestock, Peters and Deyoe, Chapter 8

Additional Teacher Notes and References:

UNIT IX: PROBLEMS AND HAZARDS OF AGRICULTURAL PRODUCTION

- A, B, C, 1. Story of the Soil, pp. 21, 13
2. Agriculture for High Schools, Andrews, Chapter 2
3. Save Our Soil, Alberta Wheat Pool
4. Our Land and its Care
5. Soil Drifting Control, C.D.A. P. 568
6. Fertilizer in Alberta, A.D.A. Cir. No. 5
7. Films: 21, 22, 23, 25
- D. 1. Agriculture for High Schools, Andrews, Chapter 8
2. Story of the Soil, p. 32
3. Illustrated Guide to Prairie Weeds, Line Elevator Service
4. Farm Weeds, Queen's Printer, Ottawa
5. Guide to Farm Practices in Saskatchewan, pp. 81 and 146
6. Weeds, Colored Plates, A.D.A.
7. Weed Control with Chemicals, U.A.
8. Films: 26, 27
- E. 1. Agriculture for High Schools, Andrews, Chapter 9
2. Story of the Soil, pp. 34 and 69
3. Guide to Farm Practices in Saskatchewan, pp. 81, 146
4. Various animal diseases are dealt with in more detail in livestock bulletins
5. Raising Livestock, Peters and Deyoe, Chapter 6
- F. 1. Agriculture for High Schools, Andrews, Chapter 10
2. Story of the Soil, pp. 34, 68
3. Guide to Farm Practice in Saskatchewan, p. 93
4. Field Crop Insects, L.E.F.S. Bul. No. 5
5. D.D.T. - Its Use on the Prairie Farm, L.E.F.S. Cir. No. 11
6. Insect Pests of Grain in Alberta, U.A. Bul. No. 24
7. Films: 28, 29, 30, 31.

Additional Teacher Notes and References:

UNIT X: APPRECIATING AND CONSIDERING CAREERS IN AGRICULTURE AND RELATED
OCCUPATIONS

1. Getting Acquainted with Agriculture, Deyoe, Chapter 24
2. Getting Started in Agriculture
3. Annual Report, Department of Agriculture (T)
4. Announcement of Regular Courses, Provincial Schools of Agriculture
and Home Economics
5. Better Schooling for Canadian Youth (T)

Additional Teacher Notes and References:

APPENDIX III: REFERENCES AND TEACHING AIDS

TEACHERS' PROFESSIONAL REFERENCES

- Hammonds, Carsie: Teaching Agriculture (McGraw-Hill, 1950)
N.E.A.: "Schools that Count in Rural Living" (Pamphlet), 1949
C.E.A.: "Agricultural Education in Canada", June, 1951
C.E.A.: "Better Schooling for Canadian Youth", September, 1951
Cole, Luella: Psychology of Adolescence (Rinehart, 1950)
Cook, Glen C.: A Handbook on Teaching Vocational Agriculture
(Inter-State, n.d.)

SELECTED REFERENCES

The references and teaching aids cited below are grouped into four general categories: (1) Reference Books, (2) Reference Bulletins and Circulars, (3) Journals and Periodicals, and (4) Audio-Visual Aids. Under each category the references are classified generally according to a particular field of agriculture. Following the references is a directory of publishers.

REFERENCE BOOKS

1. General

- Andrews, H.C.: Agriculture for High Schools (Gage, 1951)
Deyoe, G.P.: Getting Acquainted with Agriculture (Interstate, 1948)
Newton, R. (Ed.): Agricultural Research in Canada (A.I.C., 1952)
U.S.D.A.: "Farmers in A Changing World" - 1940 Year Book
U.S.D.A.: "Science in Farming" - 1947 Year Book
Beard, W.P.: Starting to Farm (Interstate, 1948)

2. Animal Production

- MacEwan, G. and Ewan, A.H.: Canadian Animal Husbandry (Nelson, 1952)
Peters, W.H. and Deyoe, G.P.: Raising Livestock (McGraw-Hill, 1946)
Thompson, W.R. and McKinney, J.: The Livestock Book (Vulcan, 1952)

3. Soils and Conservation

- McConkey, O.M.: Conservation in Canada (Dent, 1952)

4. Farm Crops

- Martin, J. H. and Leonard, W.H.: Principles of Crop Production
(Macmillan, 1949)

5. Horticulture

- Gardner, V.R.: Basic Horticulture (Macmillan 1951)
Cutting, A.B.: Canadian Home Gardening the Year Round (Musson, 1951)
Shoemaker, J.S.: Vegetable Growing (Wiley, 1947)
Daniels, F.P.: You Can Landscape Your Own Home (Dupuy and Ferguson, Ltd., 442 Jacques Cartier St., Montreal, Que.)
Foley, D.J.: Garden Flowers in Color (Macmillan, 1950)
Chabot, E.: Greenhouse Gardening for Everyone, (Barrows, 1946)
U.S.D.A.: "Trees" - 1949 Year Book

REFERENCE BULLETINS AND CIRCULARS

Publications of the Alberta Department of Agriculture will be available to schools offering the Grade IX option in Agriculture through the Curriculum Branch of the Department of Education. These publications so supplied are to remain the property of the school and are not to be distributed to the pupils. REQUESTS FOR THESE PUBLICATIONS SHOULD BE MADE ONLY BY TEACHERS, AND SHOULD BE DIRECTED TO THE CURRICULUM BRANCH, DEPARTMENT OF EDUCATION, EDMONTON, ALBERTA. These publications will be issued in limited quantities, and the teacher should specify the number required; ten copies of any publication will be the maximum supplied by the Department under ordinary circumstances. Teachers may also secure lists of available publications from the Extension Department, University of Alberta, the Extension Department, University of Saskatchewan, the Extension Department, University of Manitoba, the Canada Department of Agriculture, and the Information Service, Department of Agriculture, Washington, D.C.

GENERAL

1. University of Alberta, Department of Extension (U.A.)

*Cropping for Profit and Permanency, 1950

Bul. No. 44

2. Alberta Department of Agriculture, Extension Branch (A.D.A.)

Farming in Alberta

Annual Report of the Minister of Agriculture

Provincial Schools of Agriculture and Home Economics

3. Alberta Department of Education, School Book Branch

The Story of the Soil, 1951

4. Canada Department of Agriculture, Information Service (C.D.A.)

Types of Farming in Canada

Pub. No. 825

Canada's Agricultural Resources

Dominion Experimental Farms

Progress Report of (Local) Experimental Station

5. University of Saskatchewan, Extension Department (U.S.)

*Guide to Farm Practices in Saskatchewan

6. Miscellaneous Publications

"Canadian Council on Boys' and Girls' Club Work" - 79 Confederation Building, Ottawa, Canada

"Young Folks - Do Something - Be Somebody" - International Harvester Company, 180 North Michigan Avenue, Chicago 1, Ill.

"Recreation Fun for All" - Department of Agriculture, Winnipeg

SOILS AND CONSERVATION

1. University of Alberta, Extension Department

Soil Map of Alberta

Map

Water Erosion in Alberta

Bul. No. 56

Wooded Soils and their Management

Bul. No. 21

2. Alberta Department of Agriculture

Fertilizers in Alberta

Cir. No. 5

3. Canada Department of Agriculture

Guide to the Selection of Agricultural Soils

Pub. No. 748

Soil Drifting Control in the Prairie Provinces

Pub. No. 568

4. Miscellaneous Publications

"Our Land and its Care" - American Plant Food Council,
910 - 17 St., N. W., Washington 6, D.C.

"Save Our Soil" - Alberta Wheat Pool, 1950

Farm Implement Circulars: published by Farm Implement Companies
and could be of value in the classroom. Consult dealers.

"Trash Cover Prevents Soil Drifting" - Line Elevator Farm Service

"Water Erosion of Soils" - Line Elevator Farm Service.

"Practical Irrigation for Beginners" - Saskatchewan Department of
Agriculture.

FIELD CROPS

1. University of Alberta, Extension Department

Quality of Alberta Grown Wheat	Bul. No. 37
Press Bulletin, Department of Plant Science	Annual
Treatment of Seed Grain	Cir. No. 5
Insect Pests of Grain in Alberta	Bul. No. 24
Legume Inoculation	Cir. No. 4
Potato Crop in Alberta	Bul. No. 46

2. Alberta Department of Agriculture

Varieties of Grain for Alberta (current issue)	
Rye in Alberta	Mimeograph
Flax Production in Alberta	
Hay and Pasture Crops for Alberta	Cir. No. 63
Grass and Legume Seed Crops in Alberta	Cir. No. 79
The Weed Problem in Alberta	Bul. No. 59
Noxious Weeds Act	
Control of Wild Oats in Alberta	Cir. No. 71
Control of Couch Grass in Alberta	L. No. 81
Control of Canada Thistle and Sow Thistle in Alberta	Cir. No. 76.
Weeds Poisonous to Livestock	
Weed Control with 2, 4-D	Bul. No. 83
Ergot in Seed and Feed	Mimeograph
Weeds (Colored Plates)	

3. Canada Department of Agriculture

Progress Report of (Local) Farm Experimental Station	
Wheat, Canadian Spring Varieties of	Pub. No. 538
Winter Wheat Varieties and their Production in Alberta	Pub. No. 799
Oats in Canada	
Barley in Canada	
Good Seed of Cereals and its Significance	S. P. 29
Pasture Improvement for Cheaper Production	S. P. 56
Weeds and Weed Seeds	Bul. No. 137

4. Queen's Printer, Ottawa

Farm Weeds (Colored Plates) - Price \$2.00
Fodder and Pasture Plants (Colored Plates) - Price \$1.00

5. Miscellaneous Publications

"The Story of Wheat" - Alberta Wheat Pool, 1952
"Barley Varieties for Western Canada" - Barley Improvement Institute
"D.D.T. and its Use on the Farm" - Line Elevator Farm Service
"Field Crop Insects" - Line Elevator Farm Service
"Seed Cleaning on the Farm" - University of Saskatchewan
"Weed Control with Chemicals" - University of Saskatchewan

HORTICULTURE

1. Alberta Department of Agriculture

Alberta Horticultural Guide	
Budding and Grafting	Pub. No. 2
Farmstead Planning and Beautification	Bul. No. 9

2. University of Alberta, Extension Department

Home Vegetable Growing	Bul. No. 50
Potato Crop in Alberta	Bul. No. 46
Celery in Alberta	Bul. No. 35
Treatment of Vegetable Seeds	Cir. No. 26
Small Fruit Growing in Alberta	Bul. No. 54

3. University of Saskatchewan, Extension Department

Vegetable Gardening in Saskatchewan
Fruit Gardening in Saskatchewan

4. Canada Department of Agriculture, Information Service

Progress Report of (Local) Experimental Station	
Vegetable Growing	Pub. No. 816
Hot Beds and Cold Frames	Pub. No. 702
Irrigating the Prairie Farm Garden	Pub. No. 657
Home Storage of Fruits and Vegetables, Construction and Operation	Pub. No. 743
Potato Diseases (Illustrated Chart)	
Annual Flowers for Canadian Gardens	Pub. No. 796
Herbaceous Perennials for Canadian Gardens	Pub. No. 784
Ornamental Shrubs and Woody Climbers for Canadian Gardens	Pub. No. 713
Deciduous Trees and Conifers	Pub. No. 599
Hedges and their Use	Pub. No. 142
Pruning, Thinning and Utilizing Trees	Pub. No. 770
Planning and Planting Field Shelter Belts	Pub. No. 785
Lawns, Construction and Care	

ANIMAL PRODUCTION, POULTRY, AND BEES

1. University of Alberta, Extension Department

Beef Cattle, Selecting, Fitting and Showing	Cir. No. 22
Cattle Finishing in Alberta	Bul. No. 34
Dairy Cattle, Care and Feeding of	Bul. No. 57
Milk and Cream Defects of Farm Origin	Bul. No. 43
Sheep Production in Alberta	Bul. No. 52
Swine Production in Alberta	Bul. No. 22
Press Bulletin, Animal Science Department	Annual

2. Alberta Department of Agriculture

Beekeeping for Beginners in Alberta	Bul. No. 34
Turkey Raising in Alberta	Bul. No. 1

3. Canada Department of Agriculture

Cattle Ranching in Western Canada	Pub. No. 778
Feedlot Finishing of Cattle and Sheep in Irrigated Areas of Southern Alberta	Pub. No. 778
Warbles, Control of Cattle	W.P.S. No. 70
Feeding of Horses	Pub. No. 656
Canadian Poultry Handbook	Pub. No. 683
Conservation of Egg Quality	S.P. No. 57
Producing Pure Milk	S.P. No. 7
Cooling Milk on the Farm	Cir. No. 186

4. Miscellaneous

"Breeding and Feeding Beef Cattle" - University of Saskatchewan
"Parasites of Livestock" - University of Saskatchewan, Bulletin, No. 91

NEWSLETTERS - JOURNALS - PERIODICALS

NEWSLETTERS (Teachers should have the names of their schools placed on mailing lists.)

1. "Farm News" - Alberta Department of Agriculture, Extension Service
2. "Farm News" - Canada Department of Agriculture, Information Service
3. "Press Bulletins" - University of Alberta, Extension Department
4. "Naugatuck News Letter" - Naugatuck Chemicals, Elmira, Ontario
5. "Better Crops with Plant Food" - The American Potash Institute Inc.,
1102 - 16 St. N.W., Washington 6, D.C.

PERIODICALS (If possible, Agriculture classes should receive at least one farm paper and one farm magazine.)

1. The Western Producer, Saskatoon, Saskatchewan
2. The Livestock News, Saskatoon, Saskatchewan
3. The Country Guide, The Country Guide Limited, 290 Vaughan St.,
Winnipeg, Man.
4. The Farm and Ranch Review, Calgary, Alberta
5. Canadian Cattlemen, 28 Michael Building, Calgary
6. Agricultural Institute Review, Grindley Hall, 338 Somerset St. W.,
Ottawa.
7. The Country Gentleman, Independence Square, Philadelphia, Penn.

AUDIO-VISUAL AIDS

(Obtainable from Audio-Visual Aids Branch, Department of Education)

1. Farmers of the Prairies	Q - 264
2. Food and Freedom	TK - 438K
3. Pageant of Progress (Farm Machines)	TK - 641C
4. Romance of the Reaper (McCormick, 1831 - present)	T - 381H
5. Start Early (Junior Farm Clubs)	T - 353N
6. Root of Plants	T - 127
7. Leaves	T - 100
8. The Green Plant	Q - 190
9. The Gift of Green	T - 670B
10. Flowers at Work (Structure and Pollination)	T - 11
11. From Flower to Fruit	Q - 184
12. How Beans Grow	Q - 115
13. Windbreaks on the Prairies	TK - 231
14. Poultry on the Farm	T - 360
15. What Is Soil?	T - 810
16. Soil and Life	TK - 439K
17. Our Soil Resources	T - 505
18. Cattle Country (Ranching in Southern Alberta)	T - 261
19. Testing Seeds in Soil	Q - 358
20. Wheat - Story of Wheat	T - 309
21. Soil Drifting	Q - 251
22. Soil for Tomorrow	TK - 264
23. Irrigation	Q - 120
24. Irrigation Farming	T - 290
25. Green Acres (Irrigation, Alberta)	TK - 697
26. Wheat or Weeds	Q - 260
27. Just Weeds (Weed Control)	TK - 85
28. Vegetable Insects	TK - 634N
29. Bees (The Honey Bee)	T - 90
30. The Grasshopper	Q - 113
31. Housefly (Our Common Enemy - The Housefly)	Q - 132

PUBLISHERS

1. McGraw-Hill Company of Canada Limited, 12 Richmond St., Toronto 2, Ontario.
2. National Education Association, 1201-6 Trent St., N.W., Washington 6, D.C.
3. Canadian Education Association, 206 Huron St., Toronto, Ontario
4. W.J. Gage & Co. Limited, 82 Spadina Ave., Toronto, Ontario
5. The Interstate Publishing Company, 19-27 North Jackson Street, Danville,
Illinois
6. U. S. Department of Agriculture, Division of Publications, Office of
Information, Washington 25, D.C.
7. Thomas Nelson & Sons Limited, 91 Wellington Street West, Toronto
8. Line Elevator Farm Service, 763 Grain Exchange Bldg., Winnipeg, Man.
9. Alberta Wheat Pool, Calgary, Alberta
10. American Plant Food Council, Inc., 910 17 St. N.W., Washington 6, D.C.
11. Saskatchewan Department of Agriculture Extension Service, Regina, Saskatchewan.
12. Barley Improvement Institute, 206 Grain Exchange Bldg., Winnipeg.
13. Rinehart & Company, Inc., Publishers, New York.
14. Agricultural Institute of Canada, Grindley Hall, 338 Somerset St. W.,
Ottawa, Canada.
15. Vulcan Service Company, Inc., 25 Taylor st., San Francisco 2, Calif.
16. J. M. Dent & Sons (Canada) Limited, Toronto, Ontario.
17. The Macmillan Company of Canada Limited, 70 Bond St., Toronto.
18. The Musson Book Company, Limited, Toronto, Ontario.
19. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y.
20. M. Barrows and Company, Inc., Publishers, New York.
21. University of Saskatchewan, Extension Department, Saskatoon, Sask.

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